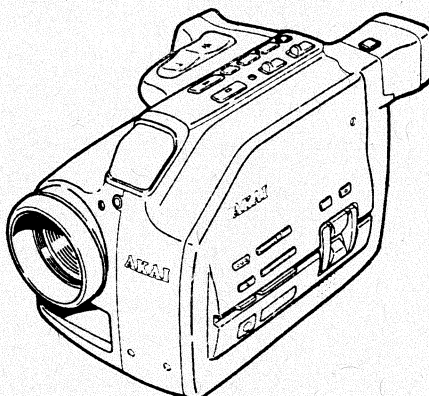


# AKAI SERVICE MANUAL



**VHSC**  
PAL

Intelligent-HQ

VIDEO MOVIE

MODEL **PVS-C20E/E-C**

MODEL **PVS-C40E/E-C**

PVC 20 E I E C  
PVC 40 E I E C

## SPECIFICATIONS

<b>PV-C20E/E-C, C40E/E-C</b>			
Format .....	VHS PAL standard	Lens	
Signal system .....	PAL-type colour signal	PV-C40E/E-C .....	F/2.0, f = 6.7 - 67 mm
Video recording system .....	Rotary, slant azimuth four-head helical scan system		10 times power zoom lens with MACRO function
Rotary heads		PV-C20E/E-C .....	F/1.8, f = 7.0 - 56 mm
PV-C40E/E-C .....	8 video heads and 1 flying erase head		8 times power zoom lens with MACRO function
PV-C20E/E-C .....	4 video heads and 1 flying erase head	Filter diameter .....	37 mm
Cassette .....	VHS-C cassette	Viewfinder .....	Electronic viewfinder with 0.6" (15.2 mm) black/white CRT
Recording/playback time		Shutter speed .....	Switchable (standard, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000 & 1/10000 sec.)
SP mode .....	30 min. with E-30 cassette	Colour temperature	
	45 min. with E-45 cassette	switching .....	Switchable (AUTO, 3200 °K, 4500 °K & 5500 °K)
LP mode (PV-C40E/E-C only) ....	60 min. with E-30 cassette	Operating temperature .....	0 °C to + 40 °C
	90 min. with E-45 cassette	Operating humidity .....	35 % to 80 %
Tape speed		Power source .....	DC 6 V
SP mode .....	23.39 mm/sec.	Power consumption .....	8.0 W
LP mode .....	11.695 mm/sec.	Dimensions .....	117 (W) x 116 (H) x 184 (D) mm
Quick finder		Weight .....	780 g (w/o battery)
SP mode .....	Approx. 3 times normal speed	<b>VA-300EA/EK/EG</b>	
LP mode .....	Approx. 5 times normal speed	Power requirement .....	AC 110 - 240 V, 50/60 Hz
FF/REW time .....	Approx. 6 min. with E-30 cassette	Power consumption .....	24 W
	Approx. 9 min. with E-45 cassette	Output .....	DC 8.0 V, 1.3 A (charge)
Video			DC 6.8 V, 1.8 A (Video movie)
Line output level .....	1.0 Vp-p/75 ohms, unbalanced	Charging system .....	Constant current, Peak detection, timer controlled
S/N ratio .....	More than 45dB	Dimensions .....	69 (W) x 41 (H) x 150 (D) mm
Horizontal resolution .....	More than 250 lines	Weight .....	380 g
Audio		<b>Standard accessories</b>	
Line output level .....	- 6 dBs/1 k ohm, unbalanced	Rechargeable battery (BP-N300) ..	1
Microphone input .....	- 68 dBs, high impedance, unbalanced	Lithium battery (CR2032E) .....	1
Earphone output .....	Minijack, 8 ohms impedance	Shoulder strap (SB-100) .....	1
Image sensor .....	1/3 "CCD image sensor (320,000 pixels)	AV cable (VW-300) .....	1
Minimum required illumination .....	5 lux	DC connection cord .....	1
		Carrying case (VG-C300) .....	1 (PV-C20E-C/C40E-C only)

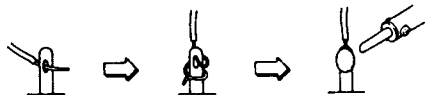
0 dBs = 0.775 V

\* For improvement purposes, specifications and design are subject to change without notice.

## ★SAFETY INSTRUCTIONS

### PRECAUTIONS DURING SERVICING

1. Parts identified by the  $\Delta$  (\*) symbol are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.  
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (insulating barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

### SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit.

The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15  $\mu$ F capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC.

The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 Mohms.

### MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.

Please leave them at an appropriate depot. All other household batteries can be thrown out with the household waste.



### PRECAUTIONS FOR LITHIUM BATTERY

The lithium battery may explode when incorrectly replaced. [OBSERVE THE FOLLOWING WHEN REPLACING]

- Replace with the same make and type or equivalent recommended by manufacturer.
- Place battery in correct polarity.
- Do not short the terminals.
- Do not charge battery.
- Do not dispose of battery in fire.

## ★INFORMATION

### TEST MODE

Some adjustment should be performed in the "TEST MODE". To set the video movie to the "TEST MODE 1" simply press both the "POWER" and "EJECT" buttons simultaneously when you intend to turn the power "ON". When the "TEST MODE 1" is engaged, an umbrella mark appears on the screen. Pressing the "FOCUS" button during "TEST MODE 1" will engage "TEST MODE 2" (a panda mark appears) and then pressing it again will engage "TEST MODE 3" (a snowman mark appears), press the button once more to go back to the "TEST MODE 1". Special effects in the "TEST MODE" are explained as follows.

#### TEST MODE 1:

- 1) Set the camera white balance to "INDOOR" and auto focus to "MANUAL" automatically.
- 2) Pressing the "SET" button during playback will memorize the I-HQ preset data.  
When the VIDEO HEAD DRUM is replaced for any reason, memorize the reference RF envelope detect voltage according to the following procedure.
  - a. Set the video movie to the "TEST MODE 1" and set the tape speed to "SP" mode.
  - b. Make a recording on a blank tape and play it back (use of a high grade or an S-VHS tape is not recommended).
  - c. Press the "SET" button during playback.
  - d. Set the tape speed to "LP" mode and repeat steps 2 to 3 (PV-C40E only).
- 3) Pressing the  $\Delta$  cursor button during playback sets the tracking to the maximum position and  $\nabla$  button sets it to the minimum.  
Pressing the "PLAY" button during playback automatically sets the tracking to the center position.
- 4) When a cassette tape with its recording safety tab removed is loaded, playback mode starts automatically.
- 5) The interval recording setting time changes as follows.  
30 sec  $\rightarrow$  5 sec, 1 min  $\rightarrow$  10 sec, 2 min  $\rightarrow$  20 sec, 5 min  $\rightarrow$  50 sec.
- 6) When the counter reaches 0:00:00 during the rewind mode, and if the memory counter mode is activated, the tape stops and then starts playback automatically.
- 7) Pressing the "F.F" button during fast forward engages the quick fast forward mode.
- 8) The tape protection system will not function in the "TEST MODE 1", therefore never play the tape to the very end, as it may stress the tape and tape transport mechanism.

TEST MODE 2 & 3: factory use only.

# I. DISASSEMBLY

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the illustrations. Reassemble in the reverse order.

## 1-1. Removal of the EVF BLOCK

1. Remove the A/V OUT cap and remove the (A) screw.
2. Remove the four (B) screws and (C) screw.
3. Disconnect the connector which connects the EVF to the MAIN PCB and remove the EVF BLOCK.

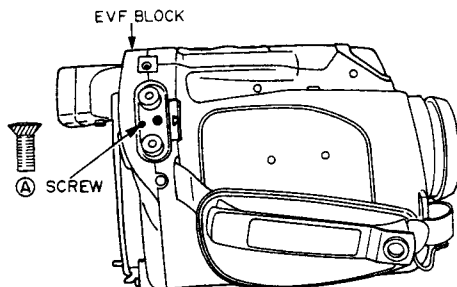


Fig.1-1

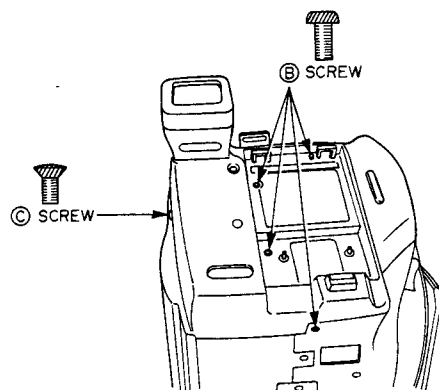


Fig.1-2

## 1-2. Removal of the OPERATION SW UPPER BLOCK

1. Remove the (A) screw on the CASE (L) then remove the (B) and (C) screws.

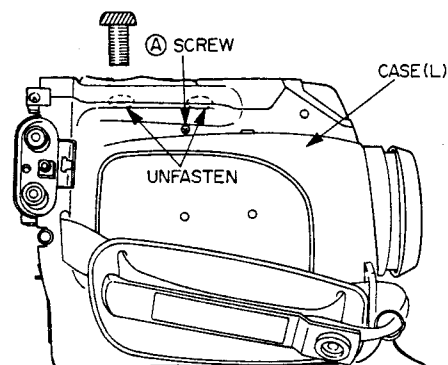


Fig.1-3

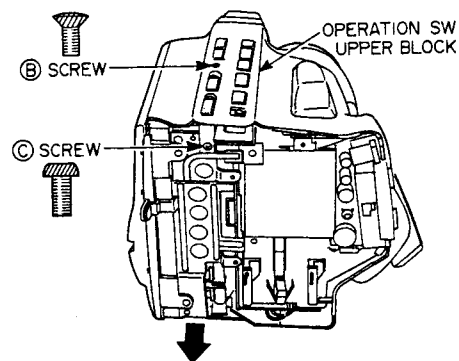


Fig.1-4

2. Press the upper side of the CASE (L) and unfasten the left side of the OPERATION SW UPPER BLOCK.
3. Carefully pull the OPERATION SW UPPER BLOCK in the direction of the arrow.

4. Unlock the stopper of the P321 connector on the MAIN PCB and disconnect the FPC (flexible printed circuit) cable then remove the OPERATION SW UPPER BLOCK.

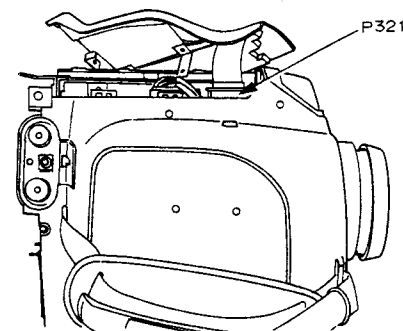


Fig.1-5

## 1-3. Removal of the CASE (L) BLOCK

1. Turn the lens hood counterclockwise and remove it.
2. Remove the (A) screw then carefully pull the MIC UNIT up. Then disconnect the connector on the MIC UNIT to remove the MIC UNIT.

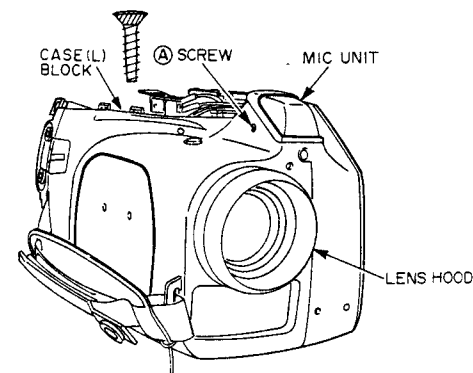


Fig.1-6

3. Remove the (B) screw on the front side and (C) screw in the MIC UNIT compartment then remove the two (D) screws on the left side.

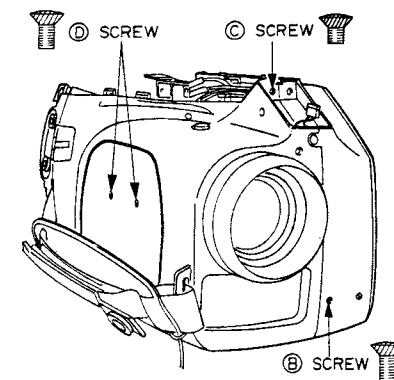


Fig.1-7

4. Remove the four (E) screws on the bottom of the unit and remove the CASE (L) BLOCK carefully.

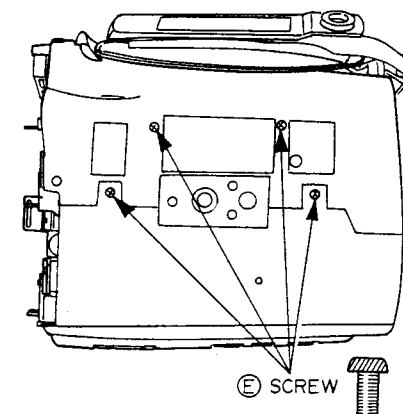


Fig.1-8

#### 1-4. Removal of the OPERATION SW LID BLOCK

1. Connect the OPERATION SW UPPER BLOCK's FPC cable into the P321 connector on the MAIN PCB.
2. Connect the DC cable from the AC adaptor.
3. Slide the EJECT key on the OPERATION SW UPPER BLOCK to open the cassette lid.
4. Disconnect the DC cable and P321 connector then remove the OPERATION SW UPPER BLOCK.
5. Unlock the stopper of the J304 connector on the CAMERA PCB and disconnect the FPC cable which comes from the OPERATION SW LID BLOCK.

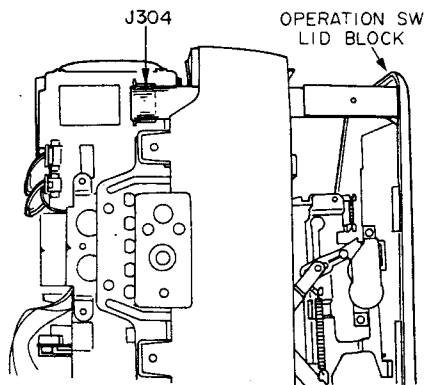


Fig.1-9

6. Remove the two (A) screws on the OPERATION SW LID BLOCK and slightly slide the OPERATION SW LID BLOCK in the direction of the arrow to remove it.

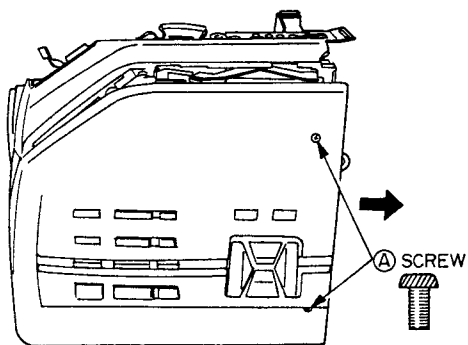


Fig.1-10

#### 1-5. Removal of the CASE (R)

1. Remove the (A) screw on the bottom and two (B) screws on the rear of the CASE (R).

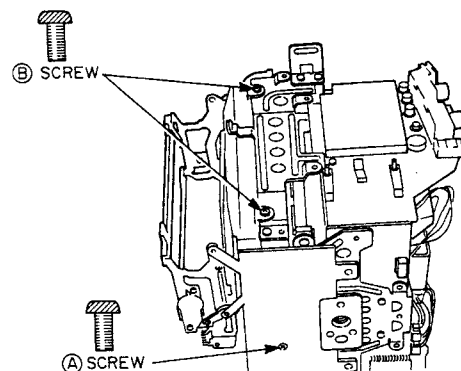


Fig.1-11

2. Remove the (C) screw in the MIC UNIT compartment and the (D) screw on the front of the CASE (R) then remove the CASE (R).

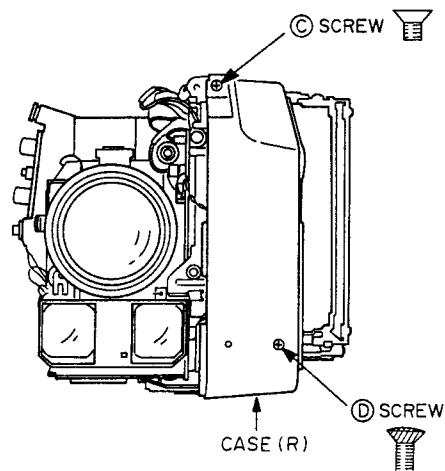


Fig.1-12

## II. PRINCIPAL PARTS LOCATION

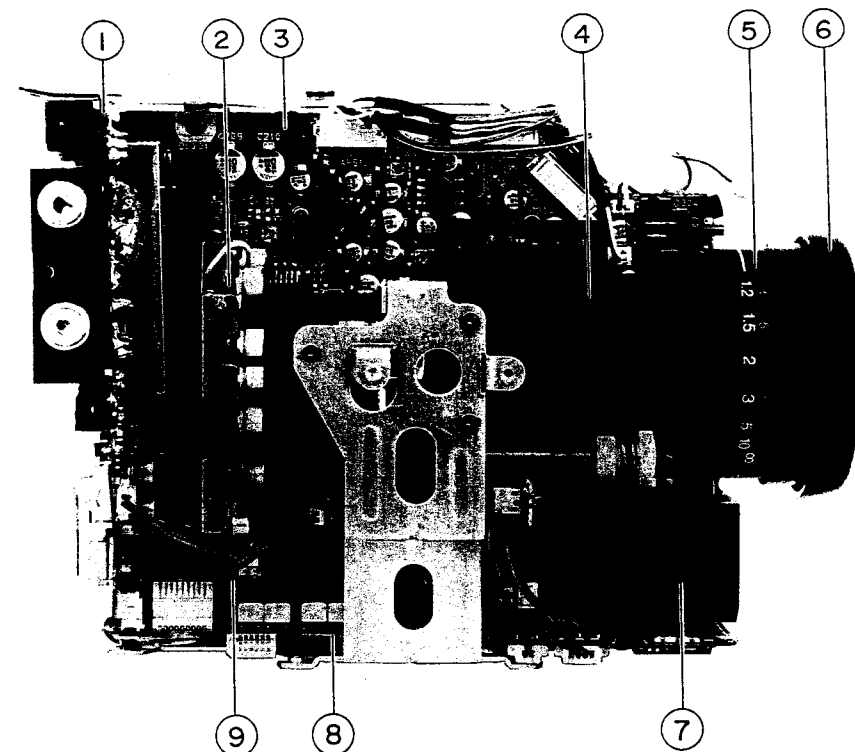


Fig.2-1 Left view

- 1.POWER PCB
- 2.CCD PCB
- 3.MAIN PCB
- 4.ZOOM RING (LENS BLOCK)
- 5.FOCUS RING (LENS BLOCK)

- 6.LENS HOOD (LENS BLOCK)
- 7.AUTO FOCUS UNIT(LENS BLOCK)
- 8.CAMERA PCB
- 9.ENCODER PCB



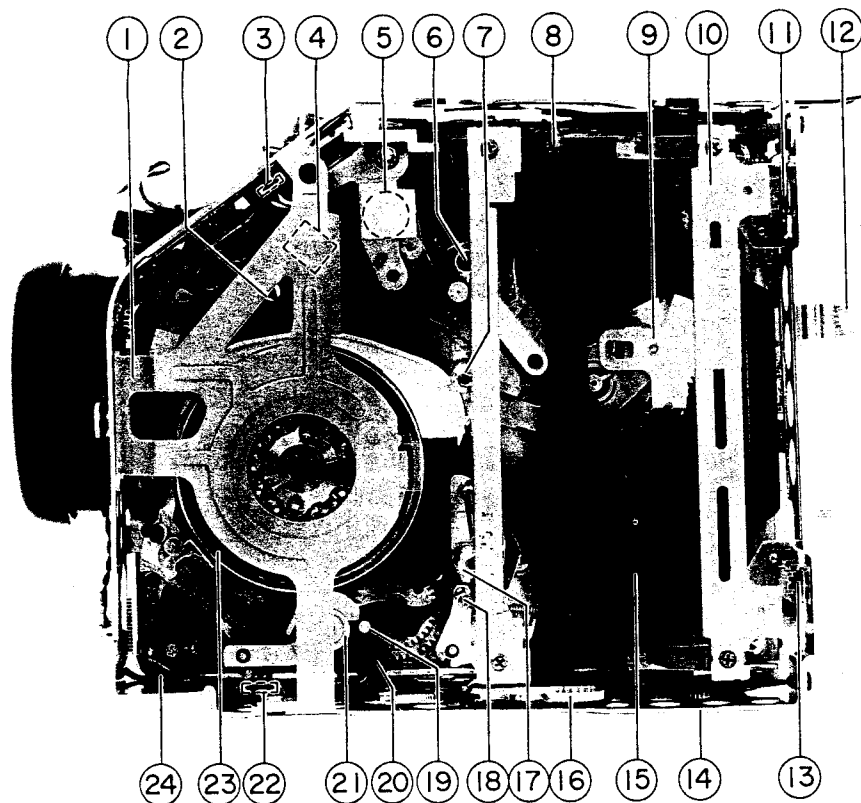


Fig. 2-2 Right view

- |   |                          |
|---|--------------------------|
| 1. CHASSIS HOLDER 3 (HEAD PROTECTION COVER) | 13. REC SAFETY SWITCH    |
| 2. SLANT-T                                  | 14. CHASSIS HOLDER 1     |
| 3. DEW SENSOR                               | 15. REEL DISK            |
| 4. A/C HEAD                                 | 16. OIL DAMPER UNIT      |
| 5. PINCH ROLLER                             | 17. TAPE GUIDE-S ASSY    |
| 6. CAPSTAN MOTOR                            | 18. TENSION ARM          |
| 7. TAPE GUIDE-T ASSY                        | 19. SLANT-S              |
| 8. REEL GEAR                                | 20. TAPE END SENSOR      |
| 9. IDLER UNIT                               | 21. IMPEDANCE ROLLER     |
| 10. EJECTOR BLOCK                           | 22. EJECT DETECT SWITCH  |
| 11. S-VHS DETECT SWITCH (NOT IN USE)        | 23. VIDEO HEAD DRUM ASSY |
| 12. CHASSIS HOLDER 2                        | 24. LOADING MOTOR        |

### III. MAIN COMPONENTS REPLACEMENT

#### 3-1. Removal of the POWER PCB

1. Remove the two (A) screws which fix the POWER PCB.

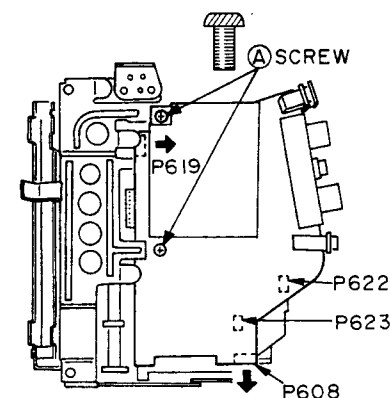


Fig. 3-1

2. Disconnect the P622 and P623 connectors.
3. Press the P608 and P619 connectors in the direction of the arrows, respectively, with care then remove the POWER PCB.

#### 3-2. Removal of the CAMERA BLOCK

##### 3-2-1. Removal of the CAMERA BLOCK

1. Remove the POWER PCB (refer to 3-1).
2. Remove the two screws on the bottom of the chassis.
3. While holding the chassis and (A) part of the MAIN PCB, squeeze the CAMERA PCB gently and pull it up (disconnect the P309 and P310 connectors) to remove the CAMERA BLOCK from the MAIN PCB.

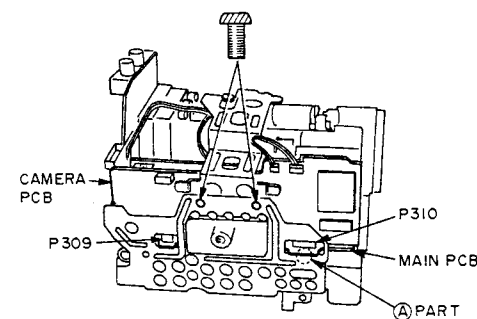


Fig. 3-2

##### 3-2-2. Removal of the CAMERA PCB and ENCODER PCB

1. Disconnect the P305, P307 and P306 (PV-C40E only) connectors on the CAMERA PCB.

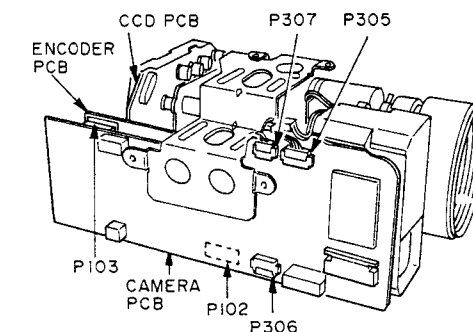


Fig. 3-3

2. Detach the P101 connector which connects the ENCODER PCB to the CCD PCB and then remove the CAMERA PCB, with ENCODER PCB attached, from the LENS BLOCK.
3. Disconnect the P102 and P103 connectors on the ENCODER PCB to detach the ENCODER PCB from the CAMERA PCB.
4. Reassemble in the reverse order for installation.

##### 3-2-3. Removal of the CCD PCB.

1. Remove the two (A) screws on the CCD PCB.

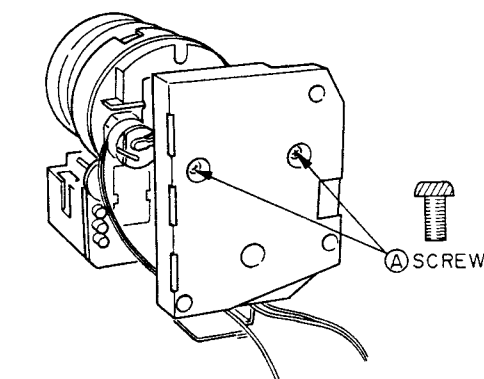


Fig. 3-4

2. Remove the CCD PCB from the LENS BLOCK by pulling it gently backwards.
3. When re-attaching the CCD PCB on the LENS BLOCK, take care not to damage or bend the CCD's leads.

### 3-2-4. Removal of the CCD

1. Remove the two ① screws which fix the CCD PLATE.

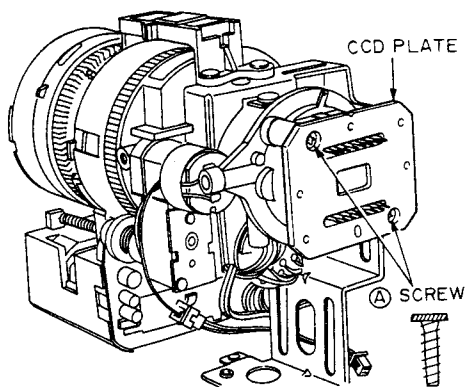


Fig.3-5

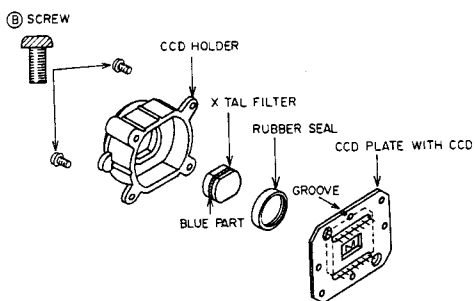


Fig.3-6

2. Remove the two ② screws and remove the CCD HOLDER from the CCD PLATE then remove the X'TAL FILTER and the RUBBER SEAL.

### 3-2-5. Installation of the CCD

1. Reassemble in the reverse order for installation. Before installing the RUBBER SEAL and X'TAL FILTER, clean the surface of the CCD with special care (We recommend using lens cleaning paper or a lens cleaning cloth).
2. After confirmation that there is no dust, dirt or any finger prints on the surface of the CCD and the X'TAL FILTER, reassemble the RUBBER SEAL and X'TAL FILTER. When reinstalling the X'TAL FILTER, take care about its direction (refer to the Fig.3-6).
3. When reinstalling the CCD HOLDER on the CCD PLATE, CCD HOLDER's protruding line must align with the CCD PLATE's groove.

4. When attaching the CCD PLATE on the LENS BLOCK, the groove of the CCD HOLDER must be face upwards.

**Note:** Do not try to detach the CCD from the CCD PLATE, as it was precisely mounted on the CCD PLATE, with glue, at the factory by using a special jig. The CCD is always supplied mounted on the CCD PLATE.

### 3-3. Removal of the MECHA. BLOCK

#### 3-3-1. Removal of the CHASSIS HOLDERS

1. Remove the POWER PCB and CAMERA BLOCK (refer to 3-1 and 3-2).
2. Remove the three ③ screws then remove the CHASSIS HOLDER 3.

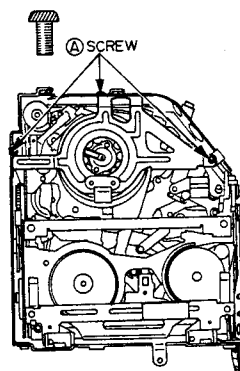


Fig.3-7

3. Remove the two ④ screws then remove the CHASSIS HOLDER 2.

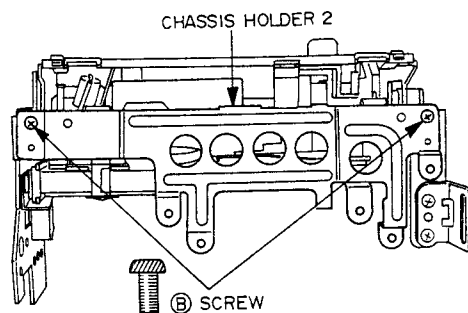


Fig.3-8

4. Remove the three ⑤ screws and then remove the CHASSIS HOLDER 1 from the MECHA. BLOCK.

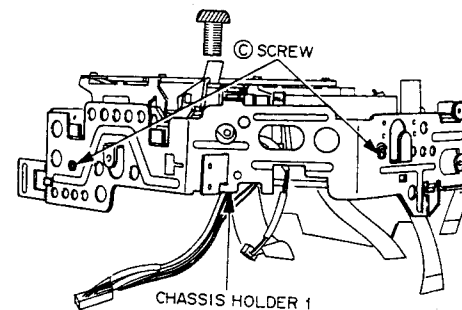


Fig.3-9

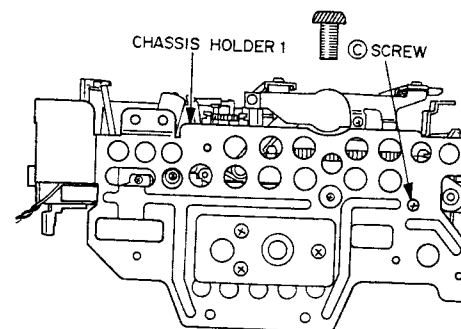


Fig.3-10

### 3-3-2. Removal of the MAIN PCB

1. Disconnect the P313, P314 and P512 connectors on the MAIN PCB.

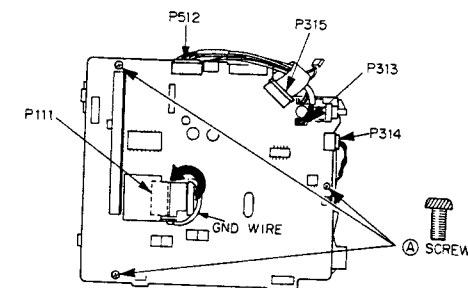


Fig.3-11

2. Unlock the stopper of the P315 and Disconnect the FPC cable.
3. Remove the ground wire with a soldering iron.
4. Bend the shield cover of the P111 in the direction of the arrow. Then unlock the P111 stopper and disconnect the FPC cable.
5. Remove the three ⑥ screws on the MAIN PCB and turn the MAIN PCB upside down.

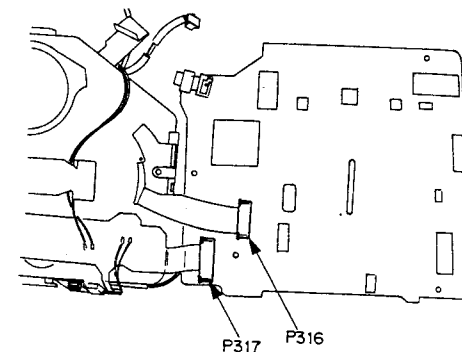


Fig.3-12

6. Unlock the stopper of the P316 and P317 connectors then disconnect each of the FPC cables respectively.

### 3-4. Disassembling of the MECHA. BLOCK

**Note:** When disassembling the MECHA.BLOCK, the LOADING MECHANISM must firstly be set to the reference position (unloaded position) unless otherwise specified.

In the reference position, the hole on the CAM-M is aligned with its reference hole on the chassis.

In normal conditions, if the EJECT key is pressed, the LOADING MECHANISM will enter the reference position (unloaded position) automatically (refer to 1-4)

#### 3-4-1. Removal of the VIDEO HEAD DRUM BLOCK

1. Remove the three (A) screws on the bottom of the chassis.
2. When reattaching the VIDEO HEAD DRUM BLOCK, thread both the FPC cables, taking care not to damage them.

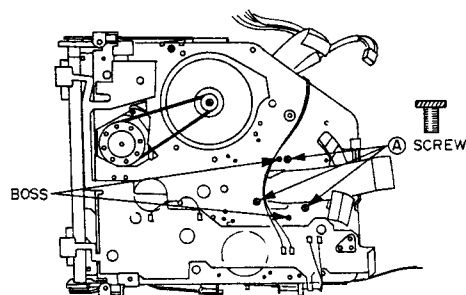


Fig.3-13

#### **Note:**

1. When replacing the VIDEO HEAD DRUM BLOCK, handle it with special care to avoid any scratching on the upper and lower head drums, or damaging the video head tips.
2. After replacement, the following adjustments are necessary for proper performance.
  - 1) A/C HEAD phase adjustment. (Mechanical adj.4-3-4)
  - 2) PB switching point adjustment. (Electrical adj.5-2-1)
  - 3) Video head REC current adjustment. (Electrical adj.5-2-9 or 5-2-10)
  - 4) I-HQ reference voltage memorization. ("TEST MODE 1", 2))

#### 3-4-2. Removal of the EJECTOR BLOCK

1. Remove the two (A) screws and remove both the tape detect switches from the MECHA. chassis.

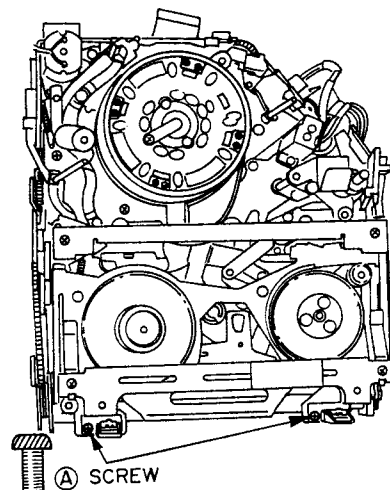


Fig.3-14

2. Remove the two (B) screws and remove both the PCB HOLDERS.

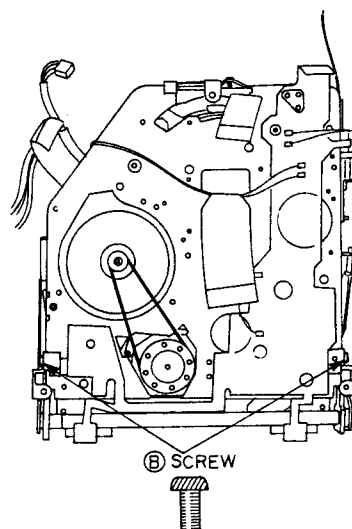


Fig.3-15

3. Press the hook of the EJECTOR BLOCK in the direction of the arrow to move the EJECTOR BLOCK in the up position.

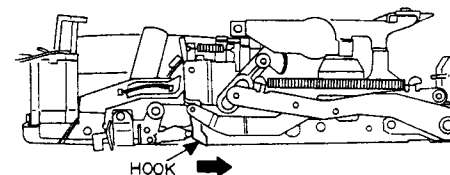


Fig.3-16

4. Remove both the left and right (C) screws which retain the EJECTOR BLOCK.
5. Pull the EJECTOR BLOCK forward slightly and then disengage both the guide rollers of the EJECTOR BLOCK, from the respective left and right ejector slots on the MECHA. chassis. Then remove the EJECTOR BLOCK from the MECHA. BLOCK.

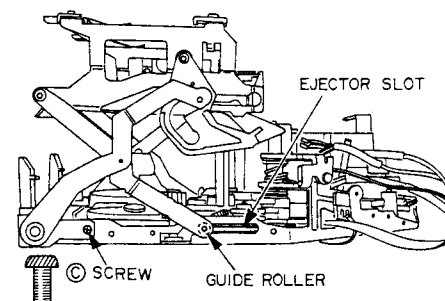


Fig.3-17

6. Reassemble in the reverse order for installation.

#### 3-4-3. Removal of the IDLER UNIT

1. Remove the EJECTOR BLOCK (refer to 3-4-2).
2. Remove the SYNC BELT on the bottom of the MECHA. chassis.
3. Remove the two (A) screws and remove the IDLER UNIT.

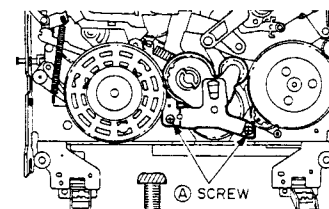


Fig.3-18

4. After replacement, reassemble in the reverse order for installation.

#### 3-4-4. Removal of the LOADING MOTOR

1. Remove the two fixation screws on the loading motor.

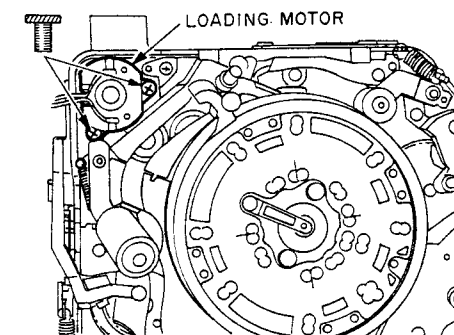


Fig.3-19

#### 3-4-5. Removal of the REEL DISK or REEL GEAR

1. Remove the EJECTOR BLOCK and IDLER UNIT (refer to 3-4-2 and 3-4-3).
2. Remove the slit washer and pull the REEL DISK up to remove it.

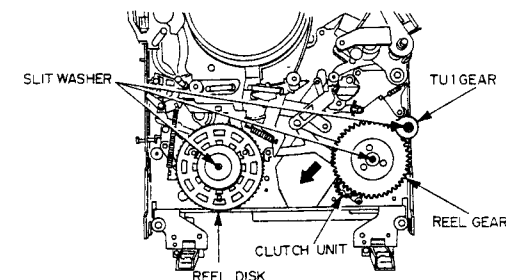


Fig.3-20

3. Remove the slit washer and remove the TU1 GEAR by pulling it up.
4. While moving the CLUTCH UNIT in the direction of the arrow with your left index finger, pull the REEL GEAR up to remove it.
5. Replace the CLUTCH UNIT if necessary.
6. Reassemble in the reverse order for installation.

# **Note:**

1. The thrust washer (s) under individual gears or the REEL DISK affect their height. Do not loose or mix the thrust washers.
2. If the REEL DISK is replaced with a new one, its height has to be confirmed. Proceed as follows.
  - a) Supply DC 3V onto the LOADING MOTOR and set both the LOADING LEADER in the "half or fully loaded position"
  - b) Set the MASTER PLANE jig (U2) onto the MECHA. chassis as shown in Fig.3-21.

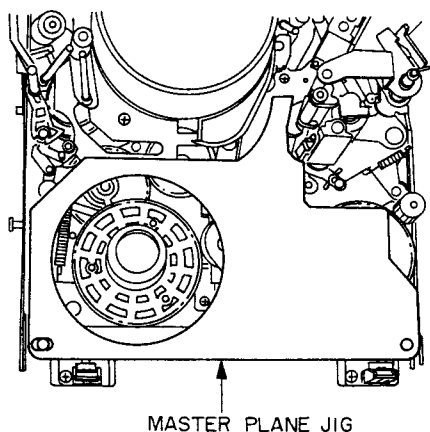


Fig.3-21

- c) Place the HEIGHT CHECK SQUARE on the MASTER PLANE jig and while holding the HEIGHT CHECK SQUARE down, check the height of the REEL DISK. Confirm that the REEL DISK height is within (A) and (B) level of the square.

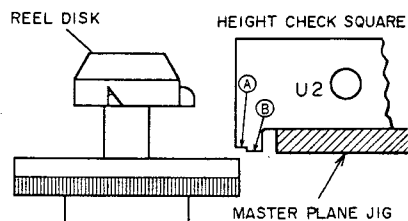


Fig.3-22

- d) If the result is not satisfactory, insert an extra thrust washer or remove the excess one until the result is satisfactory.

# **3-4-6. Removal of the PINCH ROLLER**

**Note:** Replacement of the PINCH ROLLER ASSY is not recommended as it will require sensitive A/C HEAD height adjustment and takes a lot of time to do. Replace only the PINCH ROLLER, unless the replacement of the PINCH ROLLER BLOCK is absolutely necessary.

1. Supply DC 3V to the LOADING MOTOR and set the loading mechanism to the "half loaded position" as shown in Fig.3-23.

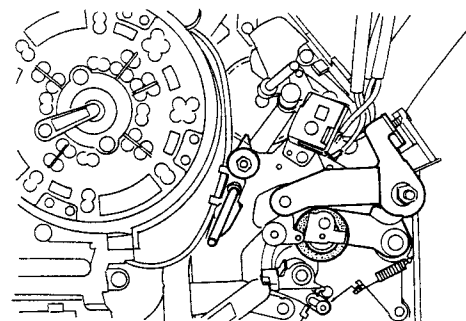


Fig.3-23

2. Remove the PINCH ROLLER CAP by pulling it up gently with radio pliers.
3. Move the GR-LEVER to the left with your finger then remove the PINCH ROLLER.
4. Reassemble in the reverse order for installation. When reinstalling the PINCH ROLLER make sure that the thicker side of the PINCH ROLLER's (A) part faces up and also that the PINCH ROLLER CAP is installed in the correct direction as shown in Fig.3-24.

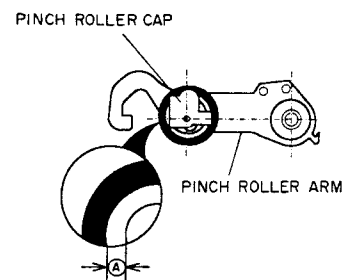


Fig.3-24

# **3-4-7. Removal of the A/C HEAD ASSEMBLY**

1. Remove the EJECTOR BLOCK (refer to 3-4-2).
2. Remove the (S) nut and remove the A/C HEAD ASSY. Take care not to lose the A/C ARM SPRING as it may jump free at this time.

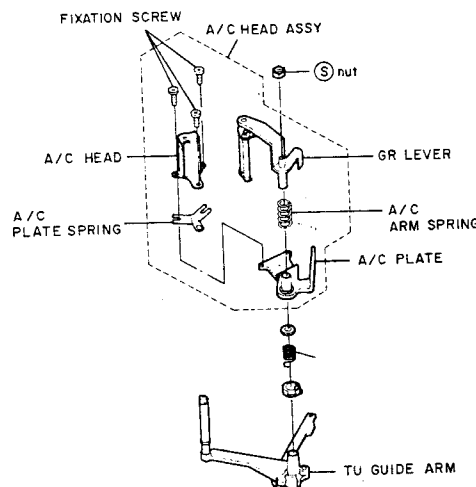


Fig.3-25

3. If replacement of the A/C HEAD is required, remove the three fixation screws and disconnect all the wires on the A/C HEAD with a soldering iron. When installing a new A/C HEAD, pre-adjust its height from the A/C PLATE approx. 1 mm (temporarily) as shown.

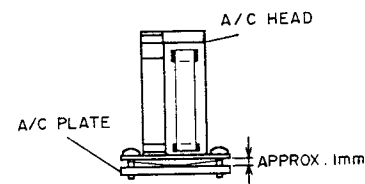


Fig.3-26

4. Reassemble the A/C HEAD BLOCK and (S) nut in the reverse order.
5. Attach the MASTER PLANE (U2) jig (the loading mechanism must be set in the loaded position before attachment, refer to Fig.3-21).

6. Adjust the GR LEVER ROLLER height by turning the (S) nut so that the lower edge of the GR LEVER ROLLER is within the (A) level and (B) level of the HEIGHT CHECK SQUARE as shown.

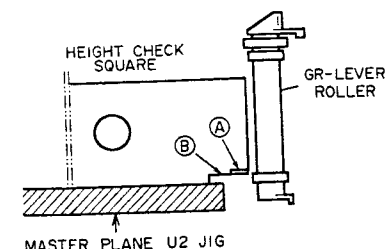


Fig.3-27

7. Lock the (S) nut with lock-paint.

**Note:** Once the A/C HEAD is removed from the A/C PLATE or A/C HEAD fixation screws are turned, precise adjustments of the A/C HEAD azimuth and height are required. proceed with the adjustment by referring from 4-3-1 to 4-3-4.

# **3-4-8. Removal of the PINCH ROLLER ASSEMBLY**

1. Remove the EJECTOR BLOCK (refer to 3-4-2).
2. Remove the A/C HEAD ASSEMBLY (refer to 3-4-7).
3. Remove the A/C WASHER, G SPRING and TUG CAM GEAR.

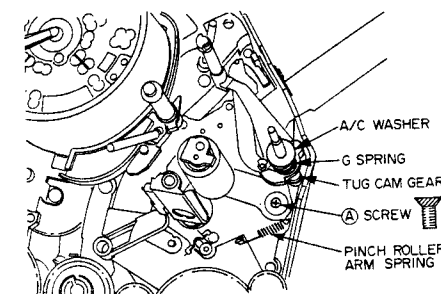


Fig.3-28

4. Remove the (A) screw on the PINCH ROLLER ARM. Unhook the PINCH ROLLER ARM SPRING then remove the PINCH ROLLER ASSEMBLY.
5. Reassemble in the reverse order for installation.

### 3-4-9. Removal of the CLEANING ARM and SLANT-T

1. Remove the slit washer of the CLEANING ARM, unhook the CLEANING ARM SPRING and then remove the CLEANING ARM.

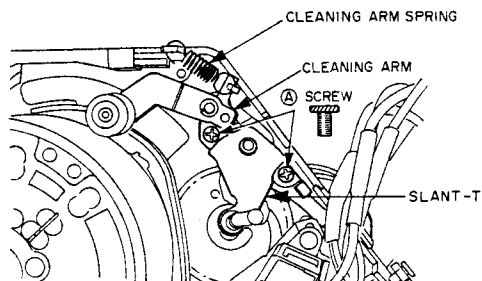


Fig. 3-29

2. Remove the two A screws and remove the SLANT-T as shown in Fig. 3-29.
3. Reassemble in the reverse order for installation.

### 3-4-10. Removal of the CAPSTAN MOTOR

**Note:** Unless it is absolutely necessary, do not remove the CAPSTAN MOTOR as it will require precise A/C HEAD adjustment and will take a lot of time to do.

1. Proceed the removal in the normal order referring to from 3-4-2 (Removal of the EJECTOR BLOCK) to 3-4-9 (Removal of the CLEANING ARM and SLANT-T) except 3-4-4 and 3-4-6. (Removal of the REEL DISK is not necessary.)
2. Remove the TAKE UP GUIDE ARM as shown in Fig. 3-30.

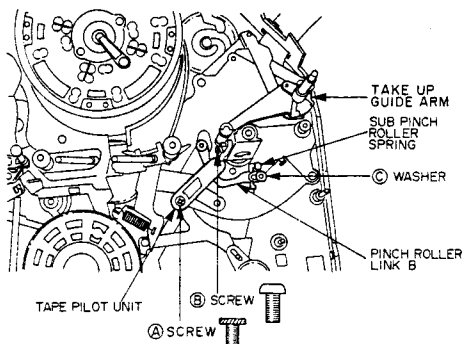


Fig. 3-30

3. Remove the A screw and B screw then remove the TAPE PILOT UNIT.

4. Remove the C washer and disengage the PINCH ROLLER LINK B from the CAPSTAN MOTOR. Take care not to lose the SUB PINCH ROLLER SPRING at this time.

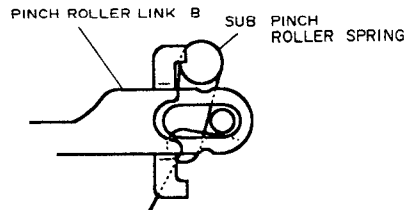


Fig. 3-31

5. Insert a flat head (—) screwdriver into the A part and while lifting the A part up slightly, remove the PINCH ROLLER LINK B.

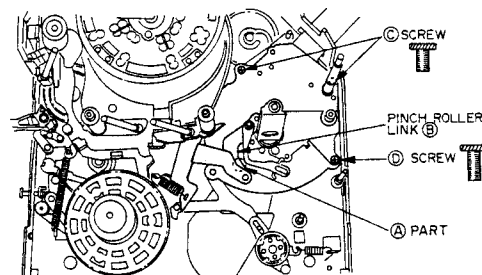


Fig. 3-32

6. Remove the two C screws and the D screw then remove the CAPSTAN MOTOR taking care not to damage to the FPC cables.
7. Reassemble in the reverse order for installation. When reinstalling the CAPSTAN MOTOR, confirm that the CAM LEVER-T and SPACER are in the correct position as shown in Fig. 3-33.

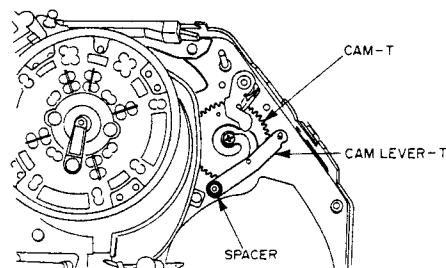


Fig. 3-33

**Note:** Since they have been removed, A/C HEAD position adjustment and GR LEVER height adjustment must be performed.

### 3-4-11. Replacement of the MODE SWITCH

**Note:** When replacing the MODE SWITCH, the LOADING MECHANISM must firstly be set to the "reference position" (unloaded position).

1. Remove the EJECTOR BLOCK.
2. Remove the VIDEO HEAD DRUM BLOCK.
3. Remove the REEL DISK.
4. Remove the slit washer on the IMPEDANCE ROLLER ASSY and unhook the IMPEDANCE ROLLER SPRING then remove the IMPEDANCE ROLLER ASSY.

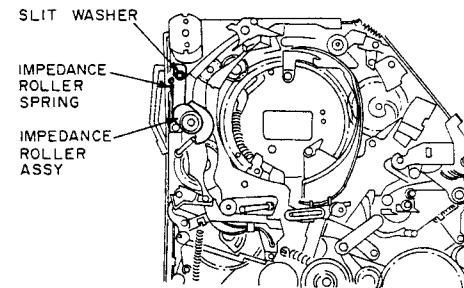


Fig. 3-34

5. Remove the slit washer on the TENSION ARM and remove the TENSION ARM.

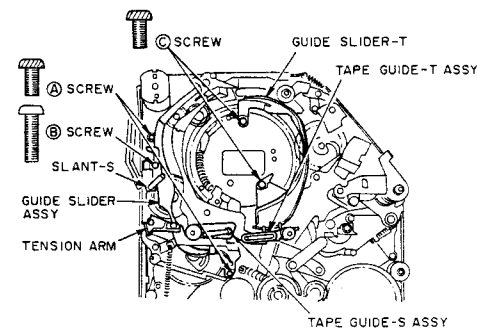


Fig. 3-35

6. Remove the two A screws and B screw then remove the GUIDE SLIDER ASSY, TAPE GUIDE-S ASSY and SLANT-S as shown in Fig. 3-35.

7. Remove the two C screws and remove the GUIDE SLIDER-T then extract it from the TAPE GUIDE-T ASSY.
8. Remove the D and E screw, then remove the GUIDE SLIDER-R.

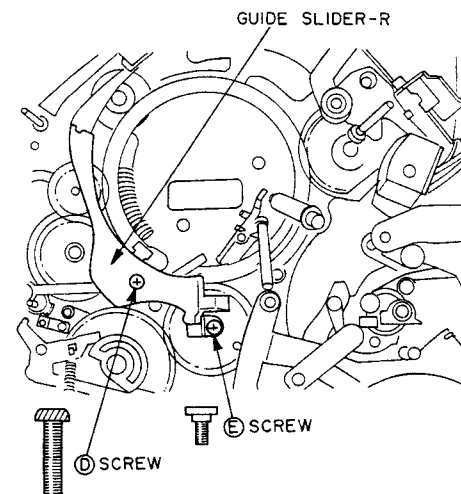


Fig. 3-36

9. Remove the slit washer on the REGULATOR ARM and unhook the TENSION SPRING 1, then remove the REGULATOR ARM. Turn the bracket of the TENSION BAND and disengage the TENSION BAND from the TENSION HOLDER.

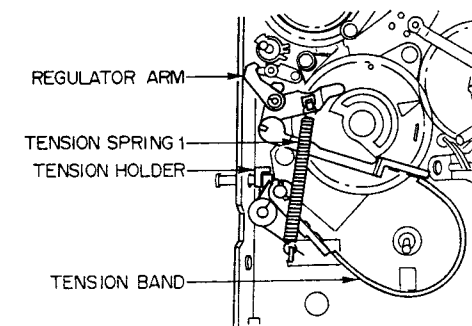


Fig. 3-37

10. Remove the slit washer and then remove the TENSION SPRING 2 and TENSION HOLDER

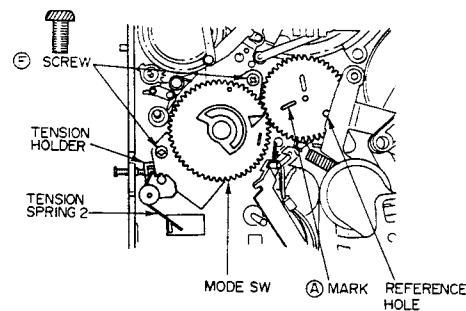


Fig.3-38

11. Remove the soldered part of the MODE SWITCH on the bottom of the chassis.
12. Remove the two Ⓢ screws and remove the MODE SWITCH.
13. When installing the MODE SWITCH, align the MODE SWITCH's ▷ mark with the Ⓐ mark on the CAM-M, and the CAM-M's reference hole should be aligned with its reference hole on the chassis as shown in Fig.3-38.
14. Reassemble in the reverse order for installation. When reinstalling the REGULATOR ARM and TENSION ARM, take care not to change the timing of the A GEAR (refer to Fig.3-39).

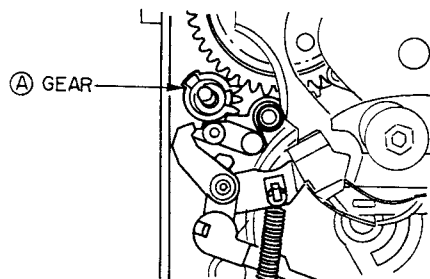


Fig.3-39

#### 3-4-12. Confirmation of the TAKE UP and SUPPLY RING UNIT timing

In case the TAKE UP RING UNIT, SUPPLY RING UNIT or any other part which is concerned with the MODE SWITCH timing has to be removed, reassemble the LOADING MECHANISM referring in Fig.3-40.

When the LOADING MECHANISM is in the "reference position" (unloaded position), each gear's timings are as follows.

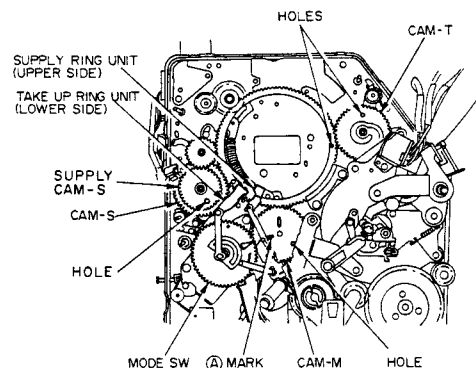


Fig.3-40

1. The MODE SWITCH's ▷ mark must align with the Ⓐ mark of the CAM-M and at this time, the hole of the CAM-M is just located on its reference hole on the MECHA. chassis.
2. Both the holes on the SUPPLY RING UNIT and the TAKE UP RING UNIT must be aligned with their reference hole on the MECHA. chassis.
3. The hole on the CAM-T must align with its reference hole on the MECHA. chassis.
4. Both the holes on the CAM-S and the SUPPLY CAM-S must align with their reference hole on the MECHA. chassis.

## IV. MECHANICAL ADJUSTMENT

### 4-1. BACK TENSION and the TENSION ARM position adjustment

1. Play back a recorded tape which is no longer needed with the tape protection cover removed.
2. Confirm that the distance between the MAIN PLATE and the TENSION ARM is  $0.7 \pm 0.2$  mm as shown. If the result is not satisfactory, adjust the TENSION ARM POSITION ADJUST SCREW until the result is satisfactory.

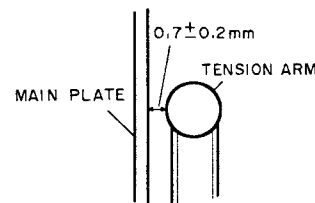


Fig.4-1

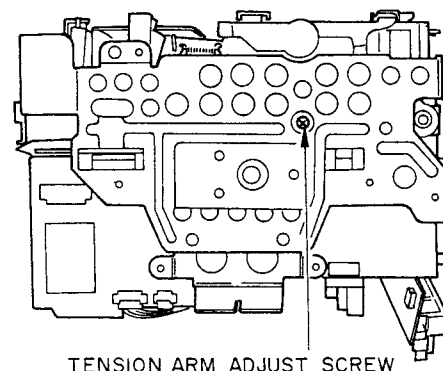


Fig.4-2

3. Play back the TORQUE METER CASSETTE TAPE (AJ-719917) for more than 10 seconds then confirm that the reading on the meter is  $15 \pm 3$  g-cm. If the reading is not satisfactory, replace the TENSION SPRING 1 (refer to Fig.3-37).
4. The fluctuation of the reading during playback should be less than 4 g-cm. If the result is not satisfactory, check the REEL DISK.

### 4-2. TAPE GUIDE-S and TAPE GUIDE-T height adjustment

1. Slightly loosen the set screws on the lower part of both the TAPE GUIDE-S and TAPE GUIDE-T with a hexagonal screw driver so that the tape guide can be adjusted with reasonable tightness.

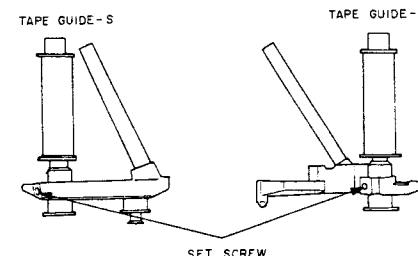


Fig.4-3

2. Connect an oscilloscope's CH-1 to P327 Ⓢ pin (ENVE) and CH-2 to Ⓢ pin (FF25) on the MAIN PCB for triggering.
3. Play back the reference tape TF-C530RFS (AT-751399J).



- Turn the GUIDE ROLLER's head with a hexagonal screw driver to obtain a flat RF envelope, as the ideal envelope shown in Fig.4-4.

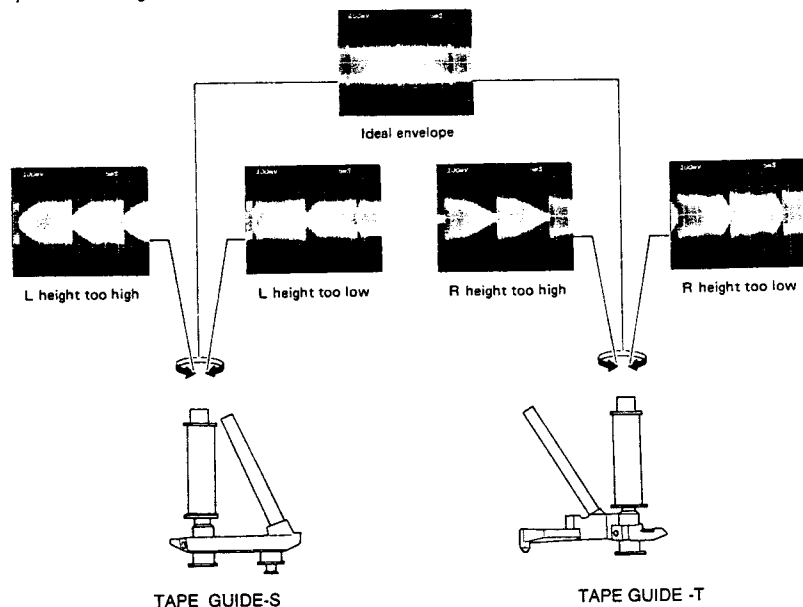


Fig. 4-4

- After the adjustment is completed, tighten both the set screws with the hexagonal screw driver.
- In case the result is not satisfactory, repeat the adjustment.

### 4-3. A/C HEAD position adjustment

#### 4-3-1. Azimuth adjustment (temporary)

- Be sure that the GR-LEVER ROLLER height is adjusted properly before proceeding (refer to 3-4-7. Removal of the A/C HEAD ASSEMBLY).
- Play back a recorded tape, which is no longer needed, with the tape protection cover removed.
- Adjust the ①, ② and ③ screw so that the upper side of the audio track is slightly visible.

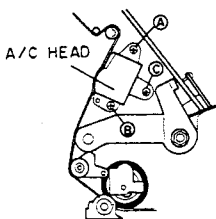


Fig. 4-5

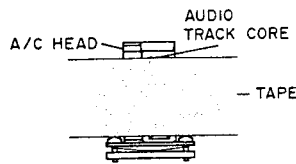


Fig. 4-6

- Play back the test tape TF-C530RFS (AT-751399J) and connect an AC milli-voltmeter to the AUDIO OUT.
- Adjust the ④ screw so that the reading on the meter reaches maximum.

#### 4-3-2. Tape curl adjustment

- Play back a recorded tape, which is no longer needed, with the tape protection cover removed.
- Adjust the ⑤ screw until the edge of the tape barely touches the lower part of the GR-LEVER ROLLER without any curl or wrinkle.

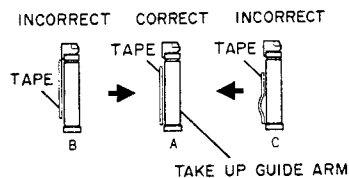


Fig. 4-7

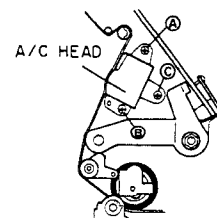


Fig. 4-8

- Adjust the A/C HEAD azimuth again (refer to 4-3-1, 3 to 5).

In case the adjustment is not satisfactory:

- Finely adjust the height of the GR-LEVER ROLLER (be sure that the GR-LEVER ROLLER is pre-adjusted precisely, using the MASTER PLANE JIG). Be sure not to turn the height adjusting nut more than 180 degrees, in either direction, in this step.

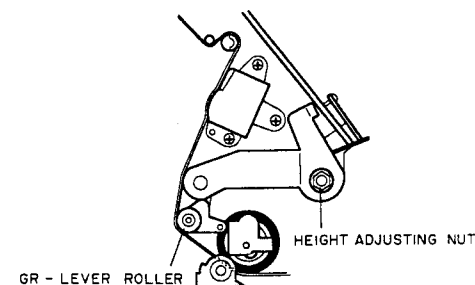


Fig. 4-9

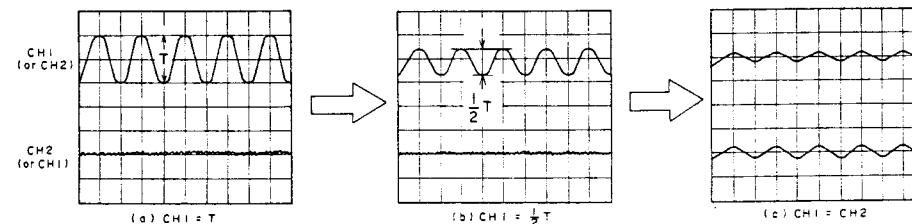


Fig. 4-10

- After the adjustment, unload the tape once then play it back again and confirm that the tape transport reverts to the same position, (the edge of the tape barely touches the lower part of the GR-LEVER ROLLER without any curl or wrinkle) within one second.
- If the result is not satisfactory, repeat steps 1 to 5 until the result is satisfactory and then adjust the A/C HEAD azimuth again.

#### 4-3-3. Height adjustment

- Connect an oscilloscope's CH-1 to the P327 ① pin (CTL OUT) on the MAIN PCB and CH-2 to the AUDIO OUT.
- Play back the test tape TF-C526HH (AT-751397J).
- Turn the ①, ② and ③ screws alternately to obtain 1/2 of the output level of either CH-1 or CH-2 whichever has an output signal as shown in Fig.4-10.

**Note:** Always turn the three screws in the same direction and to the same degrees to remove the necessity of re-adjustment of the head azimuth and tape curl.

- Then set both the oscilloscope channels to 100 mV/div and finely adjust the ①, ② and ③ screws until both signals of CH-1 and CH-2 are nearly the same level.
- Confirm there is no curl or wrinkle at the GR-LEVER ROLLER and the head azimuth is just aligned. Re-adjust the ② or ③ screw if necessary (refer to 4-3-1 to 4-3-2).
- Confirm that both signals of CH-1 and CH-2 are nearly the same level. (Confirm that neither of the CH-1 or CH-2 output levels exceed 100 mVp-p.) If the result is not satisfactory, repeat steps 3 to 5.

#### 4-3-4. Phase adjustment

1. Set the video movie to the "TEST MODE 1" (refer to the "INFORMATION" section on page 3).
2. Connect an oscilloscope's CH-1 to the P327 ⑤ pin (ENVE) and CH-2 to ③ pin (FF25) on the MAIN PCB.
3. Play back the test tape TF-C530RFS (AT-751399J) and press the play button during playback to set the tracking to the center.
4. Adjust the A/C HEAD PHASE ADJUST screw so that the RF output level becomes maximum and both upper and lower edges of the envelope are flat.

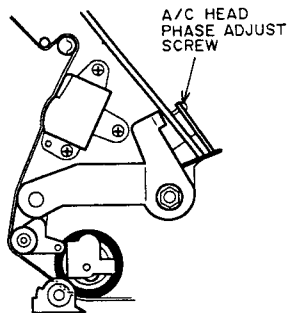


Fig.4-11

#### PV-C40E only:

5. Play back the test tape TF-C531RFL (AT-751400J) and press the play button during playback to set the tracking to the center.
6. Confirm that the RF output level is maximum and both upper and lower edges of the envelope are flat.
7. If the result is not satisfactory, re-adjust the A/C HEAD PHASE ADJUST screw.
8. Repeat steps 3 to 7 until the result is satisfactory in both the SP mode and LP mode.

#### 4-4. Camera back focus adjustment

##### 4-4-1. Setting for the camera adjustment

1. Attach the CAMERA BLOCK on the CAMERA MOUNT JIG (refer to the instructions provided with the CAMERA MOUNT JIG).
2. Set the test chart (reflection type), halogen lamp and CAMERA BLOCK as shown in Fig.4-12.  
(We recommend use of the light box with the transparent chart instead of the reflection type chart and a halogen lamp.)

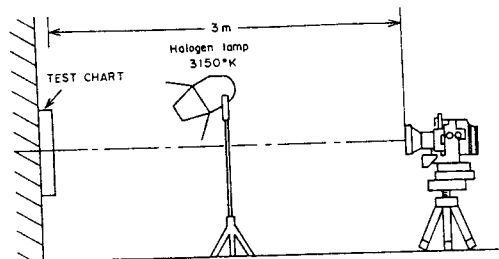


Fig.4-12

##### 4-4-2. Back focus adjustment

1. Turn the power of the halogen lamp off to make the adjustment easy.
2. Prepare the siemens chart and shoot it.
3. Press the "FOCUS" button on the OPERATION LID BLOCK and set the unit to the MF (manual focus) mode.
4. Loosen the ④ screw slightly so that the relay lens can be moved with reasonable tightness.

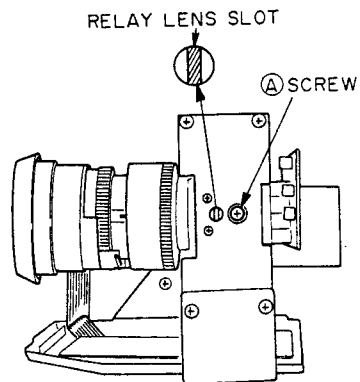


Fig.4-13

5. Turn the zoom ring to the full "telephoto" position with your fingers then adjust the focus ring so that the picture on the TV screen is just in focus.
6. Turn the zoom ring to the full "wide" position (the position just before the macro range).

7. Insert a flat head (→) screwdriver into the slot on the relay lens as shown in Fig.4-13.  
Move the relay lens forwards or backwards slightly whichever makes the focus sharper.
8. Repeat steps 5 to 7 until a satisfactory result is obtained.
9. Tighten the ④ screw carefully, making sure not to move the relay lens during tightening.  
Check the back focus again and if the result is satisfactory, lock the ④ screw with lock paint.

**Note:** When a siemens chart is used with this adjustment, the center part of the chart should be covered with white paper.

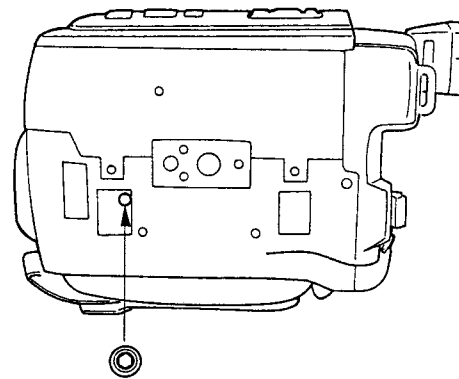
#### 4-5. Auto focus adjustment

##### 4-5-1. Reassembling the VIDEO MOVIE

1. After the electrical adjustment and back focus adjustment are completed, reassemble the VIDEO MOVIE completely.

##### 4-5-2. Auto focus adjustment

1. Turn the halogen lamp on.
2. Shoot the siemens chart and press the "T" button so that the zoom lens becomes full "telephoto" position.
3. Press the "FOCUS" button and set the unit to the MF (manual focus) mode and adjust the focus ring to the sharpest focus.
4. Set the unit to the "auto focus" mode and confirm that the focus ring moves less than  $\pm 0.5$  mm.
5. If the result is not satisfactory, remove the rubber cap on the bottom of the unit as shown in Fig.4-14 and insert a hexagonal type screw driver into the hole.  
Then adjust the screw to the sharpest focus

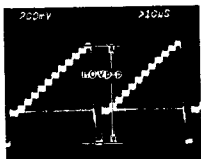
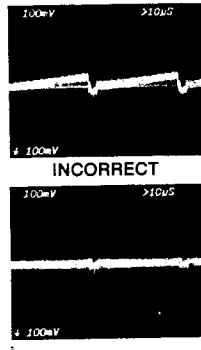
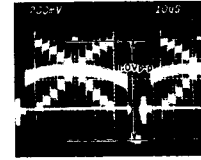


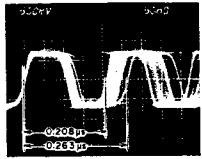
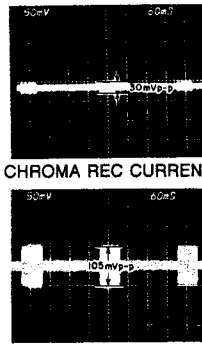
RUBBER CAP

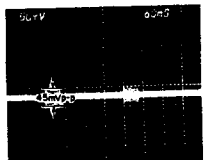
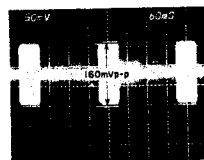
Fig.4-14

6. Repeat steps 3 to 5 until the result is satisfactory.

## 25

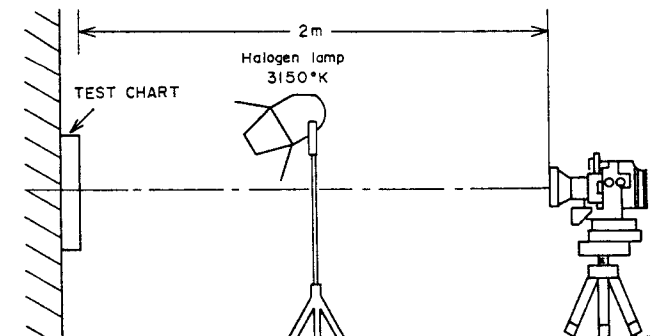
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
3	STILL TRACKING PRESET (LP) (PV-C40Eonly)	BLANK TAPE	REC → PB & TEST MODE 1	TV screen	Cursor buttons	Proceed in the same manner as described in step 2.
4	PB LEVEL	TEST TAPE (TF-C530RFS)	PB	VIDEO OUT	VR 4	 <p>Connect an oscilloscope to the VIDEO OUT and adjust the VR 4 so that the PB-Y level becomes 1.0 Vp-p.</p>
5	CCD LEVEL	TEST TAPE (TF-C530RFS)	PB	TP3 & TP4	VR 5	 <p>Connect an oscilloscope's CH-1 to the TP3 and CH-2 to the TP4. Set the oscilloscope to "ADD" mode and CH-2's polarity to "INVERTED". Adjust the VR5 so that the waveform level on the oscilloscope becomes minimum, as shown.</p>
6	Fsc	TEST TAPE (TF-C532CBS)	PB	TP201	VC201	Connect a frequency counter to the TP201 and adjust the VC201 so that the reading on the counter becomes 4.433619 MHz $\pm$ 50 Hz.
7	EE LEVEL	GRAY SCALE CHART (Camera)	EE	VIDEO OUT	VR 3	 <p>Connect an oscilloscope to the VIDEO OUT and adjust the VR3 so that the output level becomes 1.0 Vp-p.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
8	FM FREQUENCY & DEVIATION	COLOUR BAR CHART (camera)	REC	VR6 (TP5)	VR2 (FM FREQ) & VR1 (DEV)	 <p>Connect an oscilloscope to the lead of the VR6 (TP5) and adjust the VR2 so that the sync tip becomes 0.263 <math>\mu</math>s (3.8 MHz). Adjust the VR1 so that the white peak becomes 0.208 <math>\mu</math>s (4.8 MHz). Adjust the VR2 and VR1 alternately until the result is satisfactory.</p>
9	VIDEO REC CURRENT (PV-C40Eonly)	COLOUR BAR CHART (camera)	REC (LP)	TP6 & P327 ③ pin (FF25)	VR6 & VR7	 <p>Connect an oscilloscope's CH-1 to the TP6 and CH-2 to the P327 ③ pin for triggering. Set the VR6 so that the waveform on the oscilloscope becomes minimum. Adjust the VR7 so that the chroma REC current becomes 30 mVp-p. Set the tape speed to "SP" mode and confirm that the chroma REC current is <math>47 \pm 5</math> mVp-p. Set the tape speed to "LP" mode then adjust the VR6 so that the Y REC current becomes 105 mVp-p. Set the tape speed to "SP" mode and confirm that the Y REC current is <math>140 \pm 10</math> mVp-p.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
10	VIDEO REC CURRENT (PV-C20Eonly)	COLOUR BAR CHART (camera)	REC	TP6 & P327 ③ pin (FF25)	VR6 & VR7	 <p>CHROMA REC CURRENT</p>  <p>Y REC CURRENT</p> <p>Connect an oscilloscope's CH-1 to the TP6 and CH-2 to the P327 ③ pin for triggering. Set the VR6 so that the waveform on the oscilloscope becomes minimum. Adjust the VR7 so that the chroma REC current becomes 45 mVp-p. Adjust the VR6 so that the Y REC current becomes 160 mVp-p.</p>
11	AUDIO PB LEVEL	TEST TAPE (TF-C527BL)	PB	AUDIO OUT	VR501	Connect an AC milli-voltmeter to the AUDIO OUT and adjust the VR501 so that the reading on the voltmeter becomes - 5 dBs.
12	REC BIAS	BLANK TAPE	REC	P526 ① pin (GND side) & ② pin (active side)	VR502	Connect an AC milli-voltmeter to the P526 ① pin and ② pin. (Do not connect the AC milli-voltmeter's GND terminal to the ground.) Adjust the VR502 so that the reading on the voltmeter becomes 2.4 mV. Then input - 68 dBs, 1 kHz sinewave signal to the EXT. MIC jack and record it on the blank tape then play it back. Confirm that the recording level is $\pm 2$ dB of the EE level.

### 5-3.CAMERA PCB & CCD PCB

Standard setting for the CAMERA BLOCK adjustment

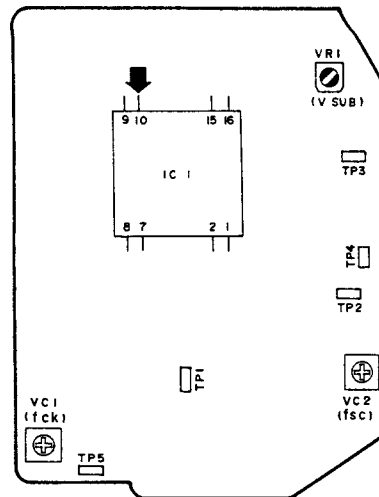


- Pattern : Reflection type, GRAY SCALE or COLOUR BAR (We recommend use of the light box with the transparent chart instead of the reflection type chart and a halogen lamp.)
- Light : 3150  $\pm$  50 °K (colour temperature), 3500  $\pm$  500 Lx (intensity)
- Distance between the pattern and lens : 2 m
- Waveform size : 40  $\mu$ s (at stair step or colour bar part) on the oscilloscope
- VECTOR SCOPE setting : 75 % saturation

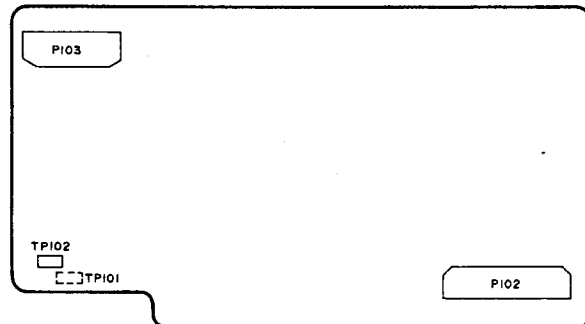
#### Note

\* Most of the adjustment should be performed using the micro computer and D/A converter equipped with this video movie. To set the movie in the "CAMERA ADJUSTING MODE", proceed as follows.

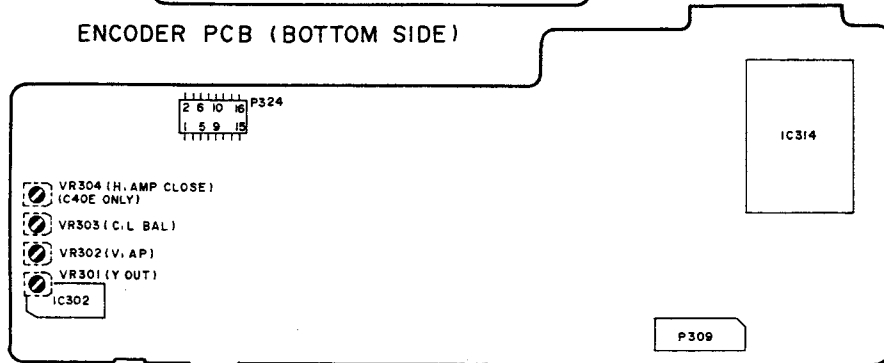
1. Connecting the P324 ③ pin (EXT-SW) to the P324 ⑤ pin (5V) with a jumper wire engages the "CAMERA ADJUSTING MODE" and a preset number and panda mark will be displayed on the screen. (Make sure that the ELECTRIC VIEW FINDER is connected to display the data on the screen.)
2. Start the adjustment from "No.0" (preset No.0) and each time you press the SET button or > cursor button, you can proceed into the next preset number. Pressing the < cursor button will return to the previous preset number. When proceeding into the next preset number without adjustment, never press the "SET" button, use only > cursor button.
3. Adjustment is possible by pressing the  $\wedge$  or  $\vee$  cursor button, and adjusting data is displayed in hexadecimal numbers on the "LEVEL" part (right lower part) of the display during adjustment.
4. Pressing the SET button will conclude the adjustment in each preset number. Adjusted data will be memorized and kept in the micro processor.
5. To make adjustment easy, connect an oscilloscope's CH-2 to the P324 ③ pin (FH/2) for triggering in most of case.




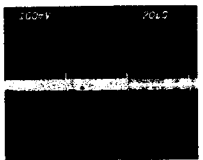
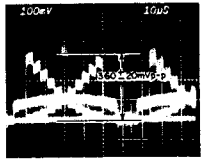
CCD PCB (TOP SIDE)



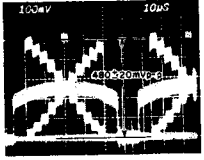
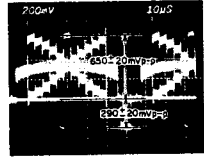
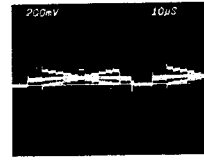
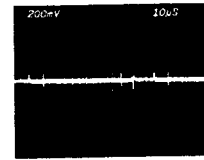
ENCODER PCB (BOTTOM SIDE)

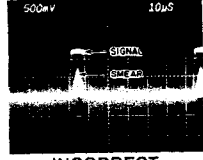
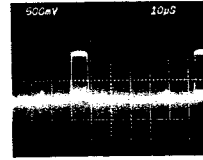
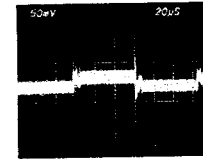
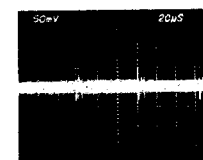


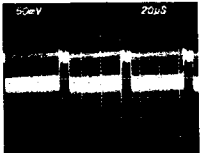
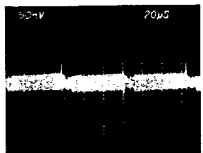
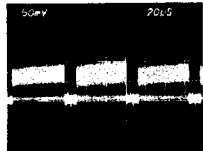
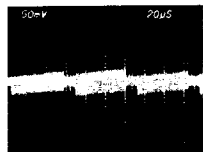
CAMERA PCB (BOTTOM SIDE)

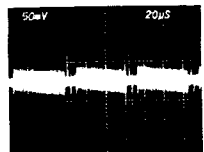
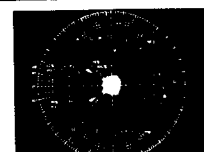
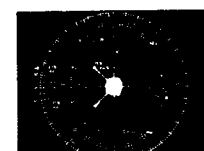
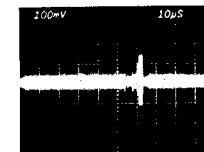
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
1	Vsub	—	EE	IC1 ⑩ pin (CCD PCB)	VR1	Remove the shield cover of the CCD PCB and then connect a digital DC voltmeter to the IC1 ⑩ pin. Adjust the VR1 so that the reading on the meter becomes $4.0 \pm 0.1$ V
2	Fck	—	EE	TP1 (CCD PCB)	VC1	Connect a frequency counter to the TP1. Adjust the VC1 so that the reading on the counter becomes $9.656250$ MHz $\pm 20$ Hz.
3	Fsc	—	EE	TP2 (CCD PCB) & TP101 (ENCODER PCB)	VC2 (CCD PCB)	Connect a digital DC voltmeter to the TP2 (CCD PCB) and adjust the VC2 so that the reading on the meter becomes $2.4$ V Connect a frequency counter to the TP101 (ENCODER PCB) and confirm that the counter indicates $4.433619$ MHz $\pm 50$ Hz.
4	OPTICAL BLANKING	—	EE, "No.0" (CAMERA ADJUSTING MODE)	P324 ⑥ pin (Y-0H)	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ⑥ pin and close the lens. Adjust the cursor buttons so that the waveform becomes as flat as possible and then press the SET button.</p>
5	CDS LEVEL	GRAY SCALE CHART	EE, "No.1" (PV-C20E only) or "No.2" (PV-C40E only)	P324 ⑤ pin (CDS 59)	Λ or V button	 <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ⑤ pin. Adjust the cursor buttons so that the level becomes <math>360 \pm 20</math> mV.</p>

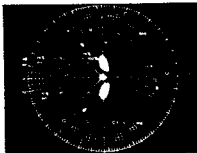
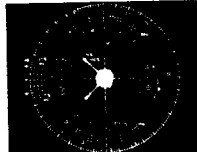




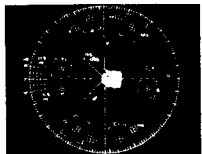





Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
6	CDS REFERENCE LEVEL SET	GRAY SCALE CHART	EE, "No.3"	—	—	Simply press the SET button and confirm that "LOW LIGHT" is displayed on the screen.
7	Y-AGC	GRAY SCALE CHART	EE, "No-4"	P324 ⑥ pin (Y-0H)	Δ or V button	 <p>Connect an oscilloscope to the P324 ⑥ pin. Adjust the cursor buttons so that the level becomes <math>480 \pm 20</math> mV.</p>
8	Y OUT LEVEL	GRAY SCALE CHART	EE	P310 ⑥ pin (Y)	VR301	 <p>Connect an oscilloscope to the P310 ⑥ pin. Adjust the VR301 so that the Y level becomes <math>650 \pm 20</math> mV. Confirm that the SYNC level is <math>290 \pm 20</math> mV at this time.</p>
9	VERT. APERTURE	GRAY SCALE CHART	EE	P324 ③ pin (V.AP)	VR302	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ③ pin. Adjust the VR302 so that the V.AP level becomes minimum. Confirm the Y out level and if the result is not satisfactory, re-adjust Y OUT level and VERT. APERTURE. Repeat both the adjustments until the result is satisfactory.</p>

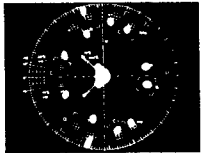
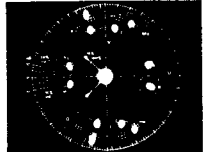
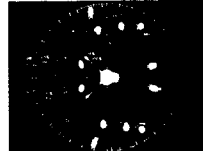

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
10	Vsub	Spot light	EE	P324 ③ pin (CDS 59)	VR1 (CCD PCB)	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ③ pin and shoot a very bright object, like a spot light. Adjust the VR1 so that the signal level is maximum (should be more than 1.0 Vp-p) and the smear is minimum as shown.</p>
11	FH/2 LEVEL	—	EE, "No-5"	P324 ⑦ pin (C.LPF)	Δ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ⑦ pin and close the lens. Press the cursor button so that the waveform on the oscilloscope becomes minimum (optimum level is less than 10 mV).</p>

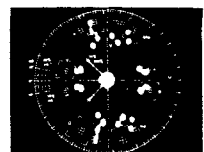
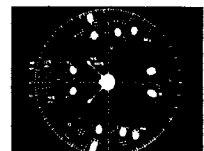
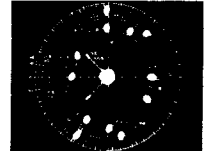
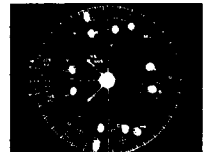
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
12	C. PEDESTAL	—	EE, "No-6"	P324 ② pin (C0H)	Λ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ② pin and close the lens. Press the cursor button so that the waveform on the oscilloscope becomes minimum (optimum level is less than 10 mV).</p>
13	R-Y PEDESTAL	—	EE, "No-8"	P324 ① pin (R-Y)	Λ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect an oscilloscope to the P324 ① pin and close the lens. Press the cursor button so that the waveform on the oscilloscope becomes minimum (optimum level is less than 10 mV).</p>

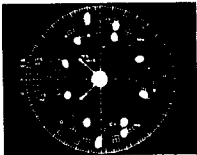
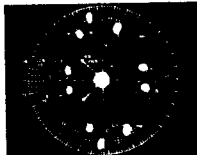
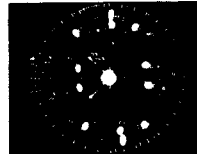
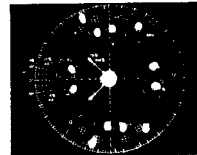
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
14	B-Y PEDESTAL	—	EE, "No-9"	P324 ③ pin (B-Y)	Λ or v button	 <p>Connect an oscilloscope to the P324 ③ pin and close the lens. Press the cursor button so that the waveform on the oscilloscope becomes minimum (optimum level is less than 10 mV).</p>
15	BURST PHASE	—	EE, "No-10"	VIDEO OUT	Λ or v button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and close the lens. Press the cursor button so that the correct burst angle is obtained.</p>
16	BURST LEVEL	—	EE, "No-11"	P310 ② pin (C OUT)	Λ or v button	 <p>Connect an oscilloscope to the P310 ② pin and close the lens. Press the cursor button so that the burst level is <math>240 \pm 20</math> mV.</p>

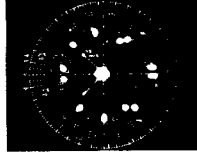
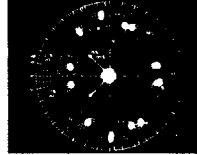
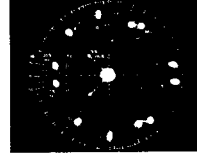
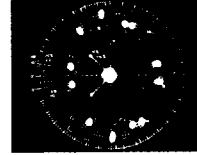
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
17	R-Y CARRIER BALANCE	—	EE, "No-12"	P310 ② pin (C OUT)	Λ or V button	[USING VECTOR SCOPE] 
						INCORRECT
						
						CORRECT
						[USING OSCILLOSCOPE] 
						INCORRECT
						
						CORRECT
						Connect an oscilloscope or a vector scope to the P310 ② pin and close the lens.
						*Using an oscilloscope : Press the cursor button so that the waveform on the oscilloscope is minimum.
*Using a vector scope : Press the cursor button so that the two separated center spots become one spot at the center of the scale.						

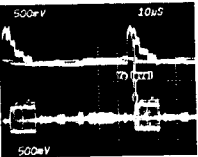
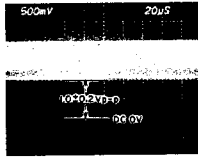
Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
18	B-Y CARRIER BALANCE	—	EE, "No-13"	P310 ② pin (C OUT)	Λ or V button	[USING VECTOR SCOPE]
						
						INCORRECT
						
						CORRECT
						[USING OSCILLOSCOPE]
						
						
						INCORRECT
						
						
CORRECT						
Connect an oscilloscope or a vector scope to the P310 ② pin and close the lens. *Using an oscilloscope : Press the cursor button so that the waveform on the oscilloscope is minimum. *Using a vector scope : Press the cursor button so that the center spot is positioned in the center of the scale (center spot can be moved left and right). *After the adjustment, confirm that the burst phase angle is correct or not. (Refer to step 15). If the result is not satisfactory, readjust the burst phase.						

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
19	R-Y WHITE BALANCE (4500 °K)	COLOUR BAR CHART	EE, "No-14"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter (4500 °K colour temperature adjustment) on the lens. Press the cursor button so that the center spot is positioned in the center of the scale (up and down).</p>
20	B-Y WHITE BALANCE (4500 °K)	COLOUR BAR CHART	EE, "No-15"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that the center spot is positioned in the center of the scale (left and right).</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
21	COLOUR LEVEL BALANCE (4500 °K)	COLOUR BAR CHART	EE	VIDEO OUT	VR303	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Adjust the VR303 so that each colour's spots on the screen overlap and vibration is minimized.</p>
22	HUE	COLOUR BAR CHART	EE, "No-16"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that each colour's spots on the screen are in the correct position as close as possible.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
23	R-Y MATRIX (4500 °K)	COLOUR BAR CHART	EE, "No-17"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>
24	B-Y MATRIX (4500 °K)	COLOUR BAR CHART	EE, "No-18"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
25	R-Y LEVEL (4500 °K)	COLOUR BAR CHART	EE, "No-19"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>
26	B-Y LEVEL (4500 °K)	COLOUR BAR CHART	EE, "No-20"	VIDEO OUT	Λ or V button	 <p>INCORRECT</p>  <p>CORRECT</p> <p>Connect a vector scope to the VIDEO OUT and mount a C-10 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
27	CHROMA CLIP LEVEL	COLOUR BAR CHART (C OUT)	EE, "No-21"	P324 ③ pin (CDS 59) & P310 ② pin	Δ or V button	 <p>Mount a C-10 filter on the lens and connect an oscilloscope's CH-1 to the P324 ③ pin then set the Ye level (yellow part of the Y signal) to 800 mV by zooming the lens to the "WIDE" position. Connect CH-2 to P310 ② pin, then press the cursor button and set it to the point where the yellow level of the chroma signal starts reducing.</p>
28	GR OFFSET	COLOUR BAR CHART	EE, "No-22"	IC1 ② pin (CCD), (CCD PCB)	Δ or V button	 <p>Remove the shield cover on the CCD PCB and connect an oscilloscope to the IC1 ② pin on the CCD PCB. Press the cursor button so that the offset level becomes <math>1.0 \pm 0.2</math> Vp-p as shown.</p>
29	R-Y WHITE BALANCE (6000 °K)	COLOUR BAR CHART	EE, "No-23"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter (6000 °K colour temperature adjustment) on the lens. Press the cursor button so that the two separated center spots become one spot at the center of the scale (up and down).</p>
30	B-Y WHITE BALANCE (6000 °K)	COLOUR BAR CHART	EE, "No-24"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the center spot is positioned in the center of the scale (left and right).</p>
31	R-Y MATRIX (6000 °K)	COLOUR BAR CHART	EE, "No-25"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>
32	B-Y MATRIX (6000 °K)	COLOUR BAR CHART	EE, "No-26"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
33	R-Y LEVEL (6000 °K)	COLOUR BAR CHART	EE, "No-27"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>
34	B-Y LEVEL (6000 °K)	COLOUR BAR CHART	EE, "No-28"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-16 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>
35	R-Y WHITE BALANCE (3100 °K)	COLOUR BAR CHART	EE, "No-29"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the two separated center spots become one spot at the center of the scale (up and down).</p>
36	B-Y WHITE BALANCE (3100 °K)	COLOUR BAR CHART	EE, "No-30"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the center spot is positioned in the center of the scale (left and right).</p>
37	R-Y MATRIX (3100 °K)	COLOUR BAR CHART	EE, "No-31"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>
38	B-Y MATRIX (3100 °K)	COLOUR BAR CHART	EE, "No-32"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>
39	R-Y LEVEL (3100 °K)	COLOUR BAR CHART	EE, "No-33"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the red spot is in the correct position.</p>
40	B-Y LEVEL (3100 °K)	COLOUR BAR CHART	EE, "No-34"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-2 filter on the lens. Press the cursor button so that the blue spot is in the correct position.</p>
41	R-Y WHITE BALANCE (FL LAMP)	COLOUR BAR CHART	EE, "No-35"	VIDEO OUT	Δ or V button	<p>Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the two separated center spots become one spot at the center of the scale (up and down).</p>



Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
42	B-Y WHITE BALANCE (FL LAMP)	COLOUR BAR CHART	EE, "No-36"	VIDEO OUT	Λ or V button	Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the center spot is positioned in the center of the scale (left and right).
43	R-Y MATRIX (FL LAMP)	COLOUR BAR CHART	EE, "No-37"	VIDEO OUT	Λ or V button	Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the blue spot is in the correct position.
44	B-Y MATRIX (FL LAMP)	COLOUR BAR CHART	EE, "No-38"	VIDEO OUT	Λ or V button	Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the red spot is in the correct position.
45	R-Y LEVEL (FL LAMP)	COLOUR BAR CHART	EE, "No-39"	VIDEO OUT	Λ or V button	Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the red spot is in the correct position.
46	B-Y LEVEL (FL LAMP)	COLOUR BAR CHART	EE, "No-40"	VIDEO OUT	Λ or V button	Connect a vector scope to the VIDEO OUT and mount a C-8 filter on the lens. If the vector is not positioned correctly, press the cursor button so that the blue spot is in the correct position.
47	HALL AMP OFFSET 1 (PV-C40E only)	GRAY SCALE CHART (40 μs at stair step part)	EE, "No-42"	—	—	Connect the P324 ⑩ pin (HALL SW) to the ground with a jumper wire and press the SET button.
48	HALL AMP OFFSET 2 (PV-C40E only)	GRAY SCALE CHART	EE, "No-43"	—	—	Connect the P324 ⑩ pin (HALL SW) to the ground with a jumper wire and press the SET button.
49	HALL AMP CLOSE (PV-C40E only)	GRAY SCALE CHART	EE, "No-44"	P324 ⑩ pin (IRIS LEVEL)	VR304	Connect a digital DC voltmeter to the P324 ⑩ pin and adjust the VR304 so that the reading on the meter is 4.0 V ("IRIS" level indication should be near D4 at this time). Then press the SET button.
50	HALL AMP OPEN (PV-C40E only)	GRAY SCALE CHART	EE, "No-45"	P324 ⑩ pin (IRIS LEVEL)	—	Connect a digital DC voltmeter to the P324 ⑩ pin and confirm that the reading on the meter is within 0.2 to 0.8 V ("IRIS" level indication should be between A and 2F). Then press the SET button.
51	HALL AMP REF LEVEL (PV-C40E only)	GRAY SCALE CHART	EE, "No-46"	P324 ⑤ pin (ODS 59)	—	Connect an oscilloscope to the P324 ⑤ pin and confirm that the waveform level is approx. 350 mVp-p. Then press the SET button. (Never mount any filter on the lens at this step.)

Step	Adjustment Item	Input signal or test tape	Mode	Test point	Adjustment Part	Result & Remarks
52	AUTO WHITE BALANCE (4500 °K)	GRAY SCALE CHART	EE, "No-47"	—	—	Mount a C-8 filter on the lens and press the SET button.
53	AUTO WHITE BALANCE (6000 °K)	GRAY SCALE CHART	EE, "No-48"	—	Λ or V button	Mount a C-14 filter on the lens. Press the cursor button and set the "LEVEL" indication on the screen at minimum. Then press the SET button.
54	AUTO WHITE BALANCE (3100 °K)	GRAY SCALE CHART	EE, "No-49"	—	Λ or V button	Remove the C-14 filter from the lens. Press the cursor button and set the "LEVEL" indication on the screen at maximum. Then press the SET button.
55	AUTO WHITE BALANCE SET	GRAY SCALE CHART	EE, "No-50"	—	—	Press the SET button. Confirm that the preset number returns to "No-0" and the "LEVEL" indication on the screen becomes "1" one second later.

## VI. PARTS LIST

### ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

### HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

#### a) Mechanism Block

#### b) PC Board

### 2. HEAD BASE BLOCK

Ref. No.	Part No.	Description
1	BH-T203A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20*03STL CMT
4	ZS-536488	BID20*08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification  
This number corresponds with the individual parts index number in that figure.

### 6. MAIN PC BOARD

Ref. No.	Part No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U.E.B.S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C.A]
X1	EI-318384	OSC XTAL NC-18C

Symbols for primary destination  
[A]: AAL (U.S.A) [S]: SAA (Australia)  
[B]: BEAB (England) [U]: U/T (Universal Area)  
[C]: CSA (Canada)  
[E]: CEE (Europe) [V]: VDE (Germany)  
[J]: JPN (Japan) [Y]: Custom Version

SP (Service Parts) Classification  
These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

### WARNING

⚠ (\*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

### AVERTISSEMENT

⚠ (\*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

### 1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	BA-732628J	PC SENSOR FPC BLK
2	BB-403699J	MECHA UP5-1 [C20E]
3	BB-403697J	MECHA UP9-1 [C40E]
4	BH-732690J	HEAD DRUM BLK C20E
5	BH-732632J	HEAD DRUM BLK C40E
6	BM-732600J	MOTOR CAPSTAN
7	BM-732601J	MOTOR LOADING
8	BO-403783J	ZOOM LENS G32B [X8 ZOOM]
9	BO-403784J	ZOOM LENS G35B [X10 ZOOM]
10	BV-732620J	EJECTOR SKZ
11	EC-404046J	C DBL LAYER AC310-301G4732 5.5
12	ED-732597J	D LED LN57
13	ED-403649J	D LED SLC-26VR3F RED
14	ED-386226J	D SCHOTTKY RB100AT-32T26 40/1
15	ED-386057J	D SILICON CHIP DAP202U
16	ED-403687J	D SILICON CHIP DA112
17	ED-405339J	D SILICON CHIP DA115
18	ED-386024J	D SILICON CHIP DA204U
19	ED-403837J	D SILICON CHIP IMN-10
20	ED-386031J	D SILICON CHIP MA110-TW
21	ED-386045J	D SILICON CHIP RB110C T100T12E
22	ED-389579J	D SILICON CHIP RB400D
23	ED-389578J	D SILICON CHIP RB451F T106T08E
24	ED-380715J	D SILICON ERB83-004 40/1.7A
25	ED-307572	D SILICON H 1SS131
26	ED-394636J	D VARACTOR CHIP 1SV200
27	ED-392394J	D ZENER CHIP MA3039-H TW
28	ED-404060J	D ZENER CHIP MA3075-L TW
29	EF-403829J	FUSE CCP2E20TE
30	EF-403827J	FUSE CCP2E25TE
31	EF-404063J	FUSE ICP-F50 50V 2.0A
32	EF-403589J	FUSE SSFR 125V 3.15A
33	EH-393489J	DL ADL-FE2544Q
34	EH-405601J	FILTER LC CHIP RXV-SYCN
35	EH-403826J	FILTER LC CHIP RZV-25QN
36	EH-404102J	FILTER LC CHIP RZV-26YN
37	EH-403513J	FILTER LC CHIP RZV-780N
38	EI-403519J	IC AN2012SB
39	EI-403500J	IC AN2163FHP
40	EI-403504J	IC AN2355S [C40E]
41	EI-403580J	IC AN2457SB
42	EI-385998J	IC AN3311S-T1
43	EI-396438J	IC BA10324F
44	EI-386011J	IC BA10358F
45	EI-385996J	IC BA7757BK QF
46	EI-403590J	IC BA9701F
47	EI-403586J	IC BA9702FS
48	EI-386064J	IC BU4070BF [C40E]
49	EI-403595J	IC LA7323M
50	EI-403657J	IC LB1617M
51	EI-403658J	IC LB1830M
52	EI-403594J	IC MM1036XF
53	EI-403517J	IC MN3110SA
54	EI-403501J	IC MN3819S
55	EI-403502J	IC MN3820S
56	EI-403533J	IC MN5179
57	EI-405654J	IC MN675201 SKZSY2P XDF1
58	EI-401280J	IC MN73033XRA
59	EI-405695J	IC M37450M6 SKZOPP3-473FP
60	EI-405162J	IC M50554-214FP
61	EI-403507J	IC M62005FP
62	EI-403505J	IC M62352GP
63	EI-405346J	IC M74HC4066FP
64	EI-403597J	IC NJM2263M
65	EI-405168J	IC NJM2901M
66	EI-403820J	IC NJM2903M
67	EI-403583J	IC NJM2904M
68	EI-403814J	IC S-2924AIF

Ref. No.	Part No.	Description
69	EI-400938J	IC S-3500A3-T1
70	EI-393419J	IC S-81215AG-RK T1
71	EI-403816J	IC S-81350HG-KD-T1
72	EI-403596J	IC TA8757AF
73	EI-403660J	IC TC4511F
74	EI-376714J1	IC TC74HC00AF [C40E]
75	EI-405348J	IC TC74HC02AF
76	EI-405347J	IC TC74HC4002AF
77	EI-388002J	IC TL8809F
78	EI-403818J	IC UPC844G2
79	EI-403859J	IC VCS035-J
80	EI-405351J	OSC CE CFAR-C4CB10000-M02
81	EI-396161J	OSC XTAL AT-51 4.433819MHZ
82	EI-392380J	OSC XTAL DS-VT-200 32.768KHZ
83	EI-389640J	OSC XTAL HC-49/US 8000KHZ
84	EI-403521J	OSC XTAL HC-49/US 19.3125MHZ
85	EI-393278J	OSC XTAL HC-49/US17.734475MHZ
86	EI-404193J	PLATE CCD PART [CCD IC]
87	EO-403584J	COIL OSC CHIP S033369
88	ES-732605J	SW LEAF
89	ES-732604J	SW LIMIT
90	ES-732605J	SW MODE
91	ES-403715J	SW OPERATION LID 20E [C20E]
92	ES-403712J	SW OPERATION LID 40E [C40E]
93	ES-403710J	SW OPERATION UPPER 20E [C20E]
94	ES-403707J	SW OPERATION UPPER 40E [C40E]
95	ES-403634J	SW TACT SKEYAB
96	ET-732599J	DETECTOR
97	ET-403694J	TR CHIP DTA114EE
98	ET-393341J	TR CHIP DTA114EU
99	ET-403689J	TR CHIP DTA114TE
100	ET-403668J	TR CHIP DTA144EE
101	ET-386033J	TR CHIP DTA144EU
102	ET-404105J	TR CHIP DTC114EE
103	ET-393342J	TR CHIP DTC114EU
104	ET-403666J	TR CHIP DTC114TE [C40E]
105	ET-403804J	TR CHIP DTC124EE
106	ET-403663J	TR CHIP DTC124TU
107	ET-403669J	TR CHIP DTC144EE
108	ET-386034J	TR CHIP DTC144EU
109	ET-386332J	TR CHIP DTC144WU
110	ET-386027J	TR CHIP 2SA1576 R,S
111	ET-403562J	TR CHIP 2SA1774 R
112	ET-403831J	TR CHIP 2SB1124 T,U
113	TR CHIP 2SB815 B6 TAT08E	
114	ET-386030J	TR CHIP 2SC4081 R,S
115	ET-403561J	TR CHIP 2SC4617 R
116	ET-403664J	TR CHIP 2SD1949 R
117	ET-403851J	TR CHIP 2SD2150 R,S
118	ET-386050J	TR D-CHIP FMG2
119	ET-396221J	TR D-CHIP FMS2
120	ET-403671J	TR D-CHIP IMB6 [C40E]
121	ET-386037J	TR D-CHIP IMX2
122	ET-403839J	TR D-CHIP UMB1
123	ET-403674J	TR D-CHIP UMD2 [C40E]
124	ET-403807J	TR D-CHIP UMG2 [C40E]
125	ET-403838J	TR D-CHIP UMH1
126	ET-403840J	TR D-CHIP UMH4
127	ET-403556J	TR D-CHIP UMS1
128	ET-403667J	TR D-CHIP UMT1
129	ET-403559J	TR D-CHIP UMW1
130	ET-403557J	TR D-CHIP UMX1
131	ET-404139J	TR D-CHIP UMY1
132	ET-403673J	TR D-CHIP UMZ1
133	ET-354414	TR DTC144ES
134	ET-732598J	TR PHOT PN147
135	ET-389577J	TR CHIP 2SD1328-TW S,T
136	HC-732607J	HEAD CTL
137	MB-732608J	BELT SYNC
138	ML-732627J	TENSION BAND
139	MP-732614J	PINCH ROLLER
140	MR-732612J	GUIDE ROLLER

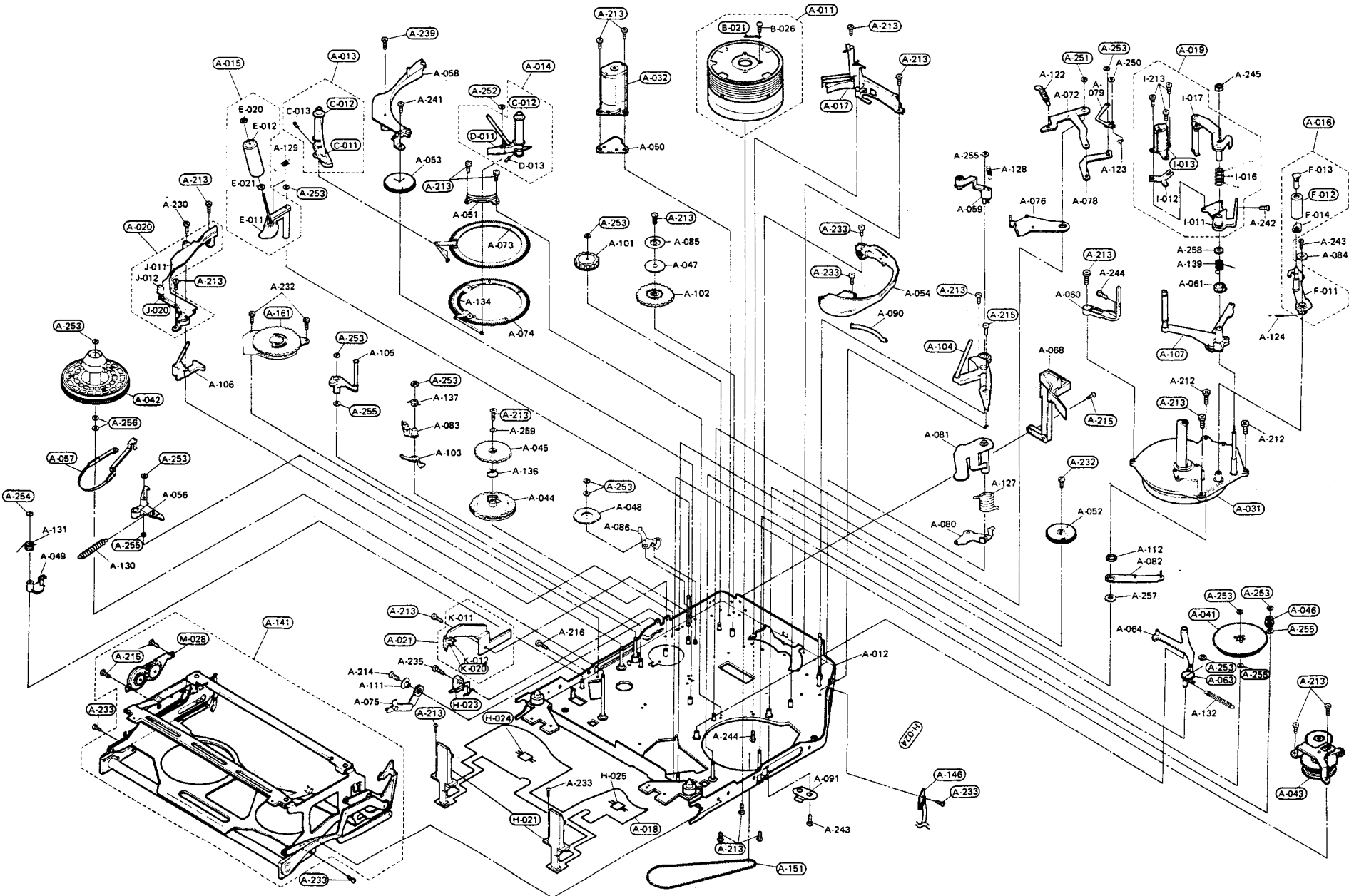
## 2. MECHA BLOCK

Ref.No.	Part No.	Description
A-011A	BH-732690J	HEAD DRUM BLK C20E
A-011B	BH-732632J	HEAD DRUM BLK C40E
A-013	BV-732633J	TAPE GUIDE S BLK
A-014	BV-732634J	TAPE GUIDE T BLK
A-015	BV-732635J	IMP-ROLLER BLK
A-016	BV-732636J	PINCH ROLLER BLK
A-017	MZ-732637J	STOPPER TG BLK
A-018	BA-732628J	PC SENSOR FPC BLK
A-019	BH-732629J	A/C HEAD BLK
A-020	BV-732630J	GUIDE SLIDER BLK
A-021	BV-732631J	END SENSOR BLK
A-031	BM-732600J	MOTOR CAPSTAN
A-032	BM-732601J	MOTOR LOADING
A-041	MZ-732609J	GEAR REEL
A-042	MT-732610J	REEL DISK
A-043	MZ-732611J	IDLER
A-046	MZ-732622J	GEAR TU1
A-057	ML-732627J	TENSION BAND
A-063	MZ-732613J	CLUTCH
A-104	MS-732625J	SLANT T
A-107	ML-732626J	GUIDE ARM T
A-141	BV-732620J	EJECTOR SKZ
A-146	EX-732603J	DEW SENSOR
A-151	MB-732608J	BELT SYNC
A-161	ES-732605J	SW MODE
A-213	ZS-390433J	PAN17X03STL BZN PS3
A-215	ZS-390522J	PAN17X06STL BZN PS3
A-233	ZS-380899J	PAN17X02STL BZN PS3
A-251	ZW-732616J	WASHER CUT (10P) 7010
A-252	ZW-732617J	WASHER CUT 9010
A-253	ZW-732618J	WASHER CUT 9020
A-254	ZW-732619J	WASHER CUT 9040
A-256	ZW-732615J	WASHER THRUST6010
B-021	VT-732602J	BRUSH
C-011	MS-732623J	TAPE GUIDESP
C-012	MR-732612J	GUIDE ROLLER
D-011	MS-732624J	TAPE GUIDE T
F-012	MP-732614J	PINCH ROLLER
H-021	ES-732606J	SW LEAF
H-023	ES-732604J	SW LIMIT
H-024	ET-732599J	DETECTOR
I-013	HC-732607J	HEAD CTL
J-020	ED-732597J	D LED LN57
K-020	ET-732598J	TR PHOT PN147
M-028	MZ-732621J	DAMPER

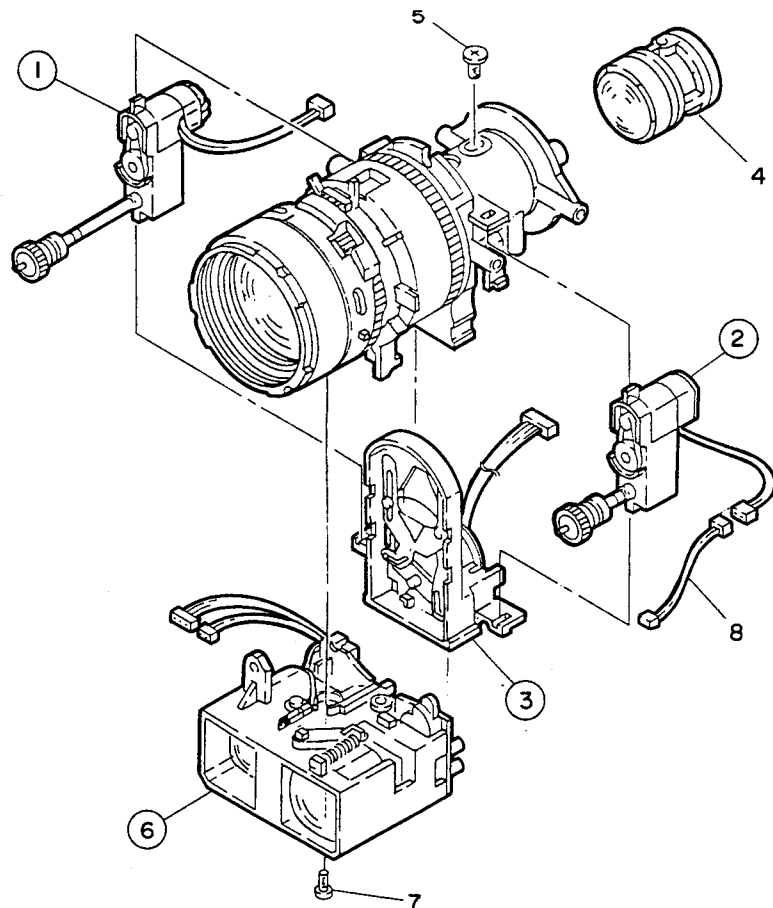
### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

**MECHA BLOCK**



### ZOOM LENS BLOCK



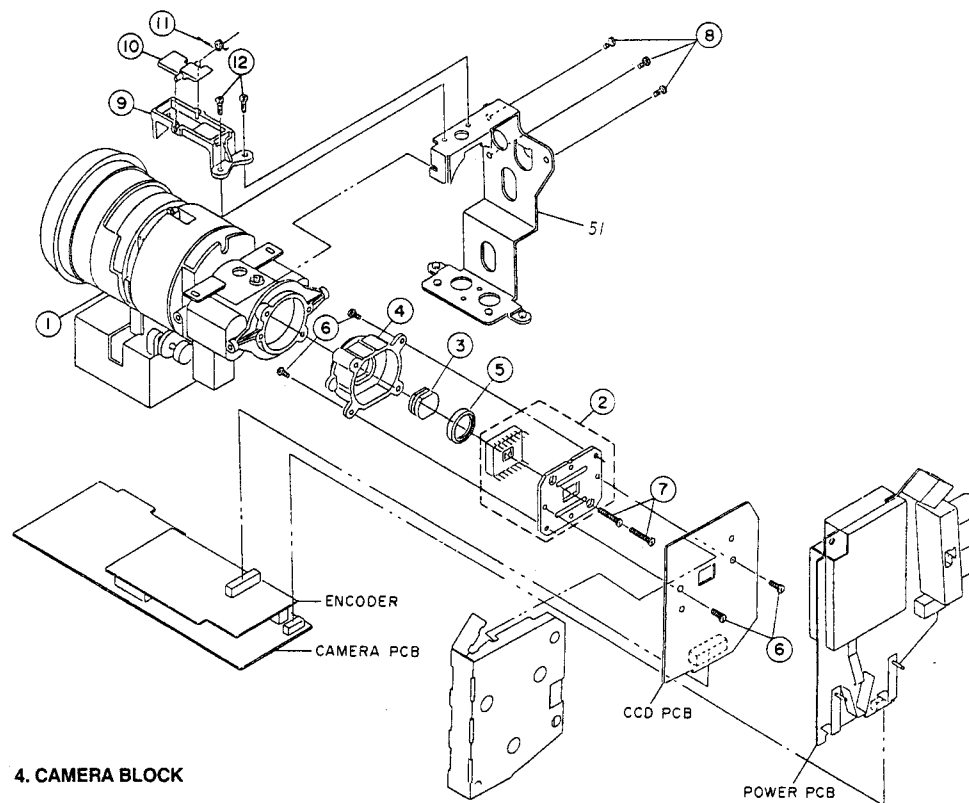
### 3. ZOOM LENS BLOCK

Ref.No.	Part No.	Description
1	BM-732706J	AF MOTOR ASSY
2	BM-732699J	PZ MOTOR ASSY
3A	VC-732700J	IG METER (C20)
	[PVS-C20]	
3B	VC-732701J	IG METER (C40)
	[PVS-C40]	
3A	VC-732704J	AF BLOCK ASSY (C20)
	[PVS-C20]	
3B	VC-732705J	AF BLOCK ASSY (C40)
	[PVS-C40]	

#### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

### CAMERA BLOCK



### 4. CAMERA BLOCK

Ref.No.	Part No.	Description
1A	BO-403783J	ZOOM LENS G32B
	[X8 ZOOM]	
1B	BO-403784J	ZOOM LENS G35B
	[X10 ZOOM]	
2	EI-404193J	PLATE CCD PART
	[CCD IC]	
3	VC-403786J	FILTER X'TAL DRP
4	VC-403191J	HOLDER CCD
5	MB-403161J	RUBBER SEAL
6	ZS-390522J	PAN17X06STL BZN PS3
7	ZS-404883J	BT PAN20X12STL BZN PS1
8	ZS-404192J	BT BID20X05STL BZN
9	MZ-403189J	HOLDER STOPPER (M)
10A	ML-403150J	STOPPER (M) X8
	[X8 ZOOM LENS]	
10B	ML-403149J	STOPPER (M) X10
	[X10 ZOOM LENS]	
11	ZG-403151J	SP TORSION (S)
12	ZS-382670J	PAN20X04STL BZN PS3

#### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 5. P.C BOARD BLOCK

Ref.No.	Part No.	Description
1A	BA-V3011A600B	PC MAIN (PAL) BLK C20E
1B	BA-V3011A600A	PC MAIN (PAL) BLK C40E
2A	BA-V3011A500B	PC (#) CAMERA POWER BLK C20E
2B	BA-V3011A500A	PC (#) CAMERA POWER BLK C40E

PC (#) CAMERA POWER BLK CONSISTS OF FOLLOWING P.C BOARD.

- CAMERA P.C BOARD
- ENCODER P.C BOARD
- CCD P.C BOARD
- POWER P.C BOARD

## 6. MAIN P.C BOARD

Ref.No.	Part No.	Description
D1	ED-386031J	D SILICON CHIP MA110-TW
D2	ED-403687J	D SILICON CHIP DA112
D3	ED-403687J	D SILICON CHIP DA112 [C40E]
D4	ED-386031J	D SILICON CHIP MA110-TW
D5	ED-386031J	D SILICON CHIP MA110-TW
D7	ED-405339J	D SILICON CHIP DA115
D201	ED-386031J	D SILICON CHIP MA110-TW
D251	ED-386031J	D SILICON CHIP MA110-TW
D252	ED-386031J	D SILICON CHIP MA110-TW
D301	ED-386031J	D SILICON CHIP MA110-TW
D302	ED-386024J	D SILICON CHIP DA204U
D303	ED-386031J	D SILICON CHIP MA110-TW
D304	ED-403649J	D LED SLC-26VR3F RED
D305	ED-404060J	D ZENER CHIP MA3075-L TW
D306	ED-386057J	D SILICON CHIP DAP202U
D501	ED-386024J	D SILICON CHIP DA204U
D502	ED-307572	D SILICON H 1SS131
D503	ED-307572	D SILICON H 1SS131
D1201	EH-393489J	DL ADL-FE2544Q
FL1	EH-404102J	FILTER LC CHIP RZV-26YN
FL501	EO-403584J	COIL OSC CHIP S033369
IC1	EI-403595J	IC LA7323M
IC2	EI-386011J	IC BA10358F
IC3	EI-386002J	IC TL8809F
IC4	EI-385998J	IC AN3311S-T1
IC5	EI-386064J	IC BU4070BF [C40E]
IC201	EI-405162J	IC M50554-214FP
IC202	EI-403597J	IC NJM2263M
IC203	EI-403596J	IC TA8757AF
IC301	EI-405654J	IC MN675201 SKZSYP2 XDF1
IC302	EI-403659J	IC VC5035-J
IC303	EI-403657J	IC LB1617M
IC304	EI-396438J	IC BA10324F
IC305	EI-403658J	IC LB1830M
IC306	EI-403660J	IC TC4S11F
IC325	EI-405679J	IC PST572KMT
IC501	EI-385996J	IC BA7757BK QF
IC503	EI-403583J	IC NJM2904M
J110	EJ-403640J	SOCKET C.52357-0690 6P
J119	EJ-403646J	SOCKET C.52357-2290 22P
J501	EJ-403635J	PHONE J 2P HSJ1456-01-210 3.5 [MIC]
P111	EJ-403684J	PLUG C.52204-2090 20P
P309	EJ-403656J	SOCKET C.52357-2090 20P
P315	EJ-403652J	PLUG C.52396-1590 15P
P316	EJ-403651J	PLUG C.52204-1590 15P
P317	EJ-403651J	PLUG C.52204-1590 15P
P321	EJ-405159J	PLUG C.52271-1290 12P
P327	EJ-403640J	SOCKET C.52357-0690 6P
TR3	ET-396221J	TR D-CHIP FMS2
TR6	ET-386037J	TR D-CHIP IMX2
TR8	ET-403561J	TR CHIP 2SC4617 R
TR9	ET-403561J	TR CHIP 2SC4617 R
TR10	ET-403561J	TR CHIP 2SC4617 R
TR11	ET-403669J	TR CHIP DTC144EE
TR12	ET-404105J	TR CHIP DTC114EE
TR13	ET-403557J	TR D-CHIP UMX1
TR14	ET-403557J	TR D-CHIP UMX1
TR15	ET-403559J	TR D-CHIP UMW1

Ref.No.	Part No.	Description
TR16	ET-403556J	TR D-CHIP UMS1
TR17	ET-386037J	TR D-CHIP IMX2
TR18	ET-403557J	TR D-CHIP UMX1
TR19	ET-403669J	TR CHIP DTC144EE
TR20	ET-403561J	TR CHIP 2SC4617 R
TR21	ET-403668J	TR CHIP DTA144EE
TR22	ET-403673J	TR D-CHIP UMZ1
TR23	ET-403561J	TR CHIP 2SC4617 R
TR24	ET-403562J	TR CHIP 2SA1774 R
TR25	ET-403666J	TR CHIP DTC114TE [C40E]
TR26	ET-403674J	TR D-CHIP UMD2 [C40E]
TR27	ET-403561J	TR CHIP 2SC4617 R
TR28	ET-403562J	TR CHIP 2SA1774 R
TR29	ET-403561J	TR CHIP 2SC4617 R
TR30	ET-403562J	TR CHIP 2SA1774 R
TR31	ET-403689J	TR CHIP DTA114TE
TR35	ET-403562J	TR CHIP 2SA1774 R
TR36	ET-403562J	TR CHIP 2SA1774 R
TR37	ET-403562J	TR CHIP 2SA1774 R
TR39	ET-403669J	TR CHIP DTC144EE
TR40	ET-403561J	TR CHIP 2SC4617 R
TR41	ET-403689J	TR CHIP DTA114TE
TR42	ET-403561J	TR CHIP 2SC4617 R
TR43	ET-403666J	TR CHIP DTC114TE
TR44	ET-403562J	TR CHIP 2SA1774 R
TR45	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR46	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR47	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR48	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR49	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR50	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR51	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR52	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR53	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR54	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR55	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR56	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR57	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR58	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR59	ET-389577J	TR.CHIP 2SD1328-TW S,T [C40E]
TR60	ET-389577J	TR.CHIP 2SD1328-TW S,T
TR61	ET-403673J	TR D-CHIP UMZ1
TR62	ET-403673J	TR D-CHIP UMZ1
TR63	ET-403673J	TR D-CHIP UMZ1
TR64	ET-403673J	TR D-CHIP UMZ1
TR65	ET-403668J	TR CHIP DTA144EE
TR66	ET-403671J	TR D-CHIP IMB6 [C40E]
TR67	ET-403671J	TR D-CHIP IMB6 [C40E]
TR68	ET-403669J	TR CHIP DTC144EE
TR69	ET-403562J	TR CHIP 2SA1774 R
TR70	ET-403557J	TR D-CHIP UMX1
TR72	ET-403669J	TR CHIP DTC144EE [C40E]
TR73	ET-403667J	TR D-CHIP UMT1
TR74	ET-403666J	PLUG CHIP DTC114TE
TR76	ET-403561J	TR CHIP 2SC4617 R
TR78	ET-403562J	TR CHIP 2SA1774 R
TR201	ET-403669J	TR CHIP DTC144EE
TR202	ET-386027J	TR CHIP 2SA1576 R,S
TR203	ET-403562J	TR CHIP 2SA1774 R
TR204	ET-403561J	TR CHIP 2SC4617 R
TR205	ET-403561J	TR CHIP 2SC4617 R
TR206	ET-403561J	TR CHIP 2SC4617 R
TR207	ET-403666J	TR CHIP DTC114TE
TR208	ET-403669J	TR CHIP DTC144EE
TR231	ET-403561J	TR CHIP 2SC4617 R
TR232	ET-403561J	TR CHIP 2SC4617 R
TR233	ET-403669J	TR CHIP DTC144EE
TR234	ET-403561J	TR CHIP 2SC4617 R
TR235	ET-403689J	TR CHIP DTA114TE



Ref.No.	Part No.	Description
TR236	ET-403694J	TR CHIP DTA114EE
TR251	ET-403559J	TR D-CHIP UMW1
TR252	ET-403561J	TR CHIP 2SC4617 R
TR253	ET-403694J	TR CHIP DTA114EE
TR254	ET-403562J	TR CHIP 2SA1774 R
TR255	ET-403559J	TR D-CHIP UMW1
TR256	ET-403689J	TR CHIP DTA114TE
TR301	ET-393342J	TR CHIP DTC114EU
TR302	ET-386034J	TR CHIP DTC114EU
TR303	ET-386033J	TR CHIP DTA114EU
TR304	ET-386050J	TR D-CHIP FMG2
TR305	ET-393341J	TR CHIP DTA114EU
TR306	ET-403674J	TR D-CHIP UMD2
TR307	ET-403668J	TR CHIP DTA114EE
TR499	ET-403669J	TR CHIP DTC114EE
TR501	ET-386030J	TR CHIP 2SC4081 R,S
TR502	ET-386030J	TR CHIP 2SC4081 R,S
TR503	ET-386030J	TR CHIP 2SC4081 R,S
TR504	ET-393342J	TR CHIP DTC114EU
TR505	ET-386030J	TR CHIP 2SC4081 R,S
TR506	ET-393341J	TR CHIP DTA114EU
TR507	ET-386034J	TR CHIP DTC114EU
TR508	ET-386027J	TR CHIP 2SA1576 R,S
TR509	ET-403664J	TR CHIP 2SD1949 R
VC201	EC-389604J	C S-FIX CHIP T12 TZB04R200BA
VR1	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR2	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR3	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR4	EV-404152J	R S-FIX C. T08 TMC3KTR 332
VR5	EV-404218J	R S-FIX C. T08 TMC3KTR 681
VR6	EV-404151J	R S-FIX C. T08 TMC3KTR 222
VR7	EV-404151J	R S-FIX C. T08 TMC3KTR 222
VR301	EV-404153J	R S-FIX C. T08 TMC3KTR 473
VR501	EV-404150J	R S-FIX C. T08 TMC3KTR 103
VR502	EV-404153J	R S-FIX C. T08 TMC3KTR 473
X201	EI-396161J	OSC XTAL AT-51 4.433619MHZ
X301	EI-389640J	OSC XTAL HC-49/U 8000KHZ

## 7. CAMERA P.C BOARD

Ref.No.	Part No.	Description
C392	EC-404046J	C DBL LAYER AC310-301G473Z 5.5
D301	ED-405339J	D SILICON CHIP DA115
D302	ED-405339J	D SILICON CHIP DA115
		[C40E]
D303	ED-386024J	D SILICON CHIP DA204U
D304	ED-403837J	D SILICON CHIP IMN-10
D305	ED-403837J	D SILICON CHIP IMN-10
D306	ED-386024J	D SILICON CHIP DA204U
D307	ED-386024J	D SILICON CHIP DA204U
FL301	EH-403513J	FILTER LC CHIP RZV-790N
FL302	EH-405601J	FILTER LC CHIP RXV-5YCN
FL303	EH-403826J	FILTER LC CHIP RZV-25QN
IC301	EI-403500J	IC AN2163FHP
IC302	EI-403501J	IC MN3819S
IC303	EI-403502J	IC MN3820S
IC304	EI-403505J	IC M62352GP
IC305	EI-403505J	IC M62352GP
IC306	EI-403583J	IC NJM2904M
IC307	EI-403583J	IC NJM2904M
IC308	EI-403583J	IC NJM2904M
		[C40E]
IC309	EI-400938J	IC S-3500A3-T1
IC310	EI-393419J	IC S-81215AG-RK T1
IC311	EI-403814J	IC S-2924AIF
IC312	EI-405346J	IC M74HC4066FP
IC313	EI-403507J	IC M62005FP
IC314	EI-405695J	IC M37450M8 SKZOPP3-473FP
IC315	EI-403816J	IC S-81350HG-KD-T1
IC316	EI-403818J	IC UPC844G2
IC317	EI-405168J	IC NJM2901M
IC318	EI-405347J	IC TC74HC4002AF
IC319	EI-405348J	IC TC74HC02AF
IC320	EI-403820J	IC NJM2903M
IC323	EI-403818J	IC UPC844G2
J302	EJ-403622J	SOCKET C.52357-2690 26P
J303	EJ-403813J	SOCKET C.52357-1890 18P
J304	EJ-404062J	PLUG C. 52207-1090 10P
J308	EJ-403623J	SOCKET C.52357-1490 14P
P309	EJ-403620J	PLUG C.53263-2090 20P
P310	EJ-403598J	PLUG C.53263-0690 06P
P324	EJ-405160J	PLUG C.53263-1690 16P
TR301	ET-403561J	TR CHIP 2SC4617 R
TR302	ET-403556J	TR D-CHIP UMS1
TR303	ET-403561J	TR CHIP 2SC4617 R
TR304	ET-403557J	TR D-CHIP UMX1
TR305	ET-403561J	TR CHIP 2SC4617 R
TR309	ET-403562J	TR CHIP 2SA1774 R
TR311	ET-403557J	TR D-CHIP UMX1
TR313	ET-403561J	TR CHIP 2SC4617 R
TR314	ET-403562J	TR CHIP 2SA1774 R
TR315	ET-403562J	TR CHIP 2SA1774 R
TR316	ET-403667J	TR D-CHIP UMT1
TR317	ET-403667J	TR D-CHIP UMT1
TR319	ET-403838J	TR D-CHIP UMH1
TR320	ET-403561J	TR CHIP 2SC4617 R
TR321	ET-403689J	TR CHIP DTA114TE
TR322	ET-403839J	TR D-CHIP UMB1
TR323	ET-403557J	TR D-CHIP UMX1
TR324	ET-403840J	TR D-CHIP UMH4
TR325	ET-403663J	TR CHIP DTC124TU
TR326	ET-403839J	TR D-CHIP UMB1
TR327	ET-403804J	TR CHIP DTC124EE
TR330	ET-403562J	TR CHIP 2SA1774 R
		[C40E]
VR301	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR302	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR303	EV-404156J	R S-FIX C. T08 TMC3KTR 472
VR304	EV-404156J	R S-FIX C. T08 TMC3KTR 104
		[C40E]
X301	EI-392380J	OSC XTAL DS-VT-200 32.768KHZ
X302	EI-405351J	OSC CE C.FAR-C4CB1 0000-M02

## 8. ENCODER P.C BOARD

Ref.No.	Part No.	Description
IC101	EI-403580J	IC AN2457SB
IC105	EI-403504J	IC AN2355S
		[C40E]
IC106	EI-376714J1	IC TC74HC00AF
		[C40E]
J101	EJ-403622J	SOCKET C.52357-2690 26P
P102	EJ-403621J	PLUG C.53264-2690 26P
P103	EJ-403801J	PLUG C.53264-1890 18P
TR101	ET-403556J	TR D-CHIP UMS1
TR102	ET-403559J	TR D-CHIP UMW1
TR110	ET-403804J	TR CHIP DTC124EE
		[C40E]
TR111	ET-403807J	TR D-CHIP UMG2
		[C40E]
TR113	ET-403557J	TR D-CHIP UMX1
		[C40E]

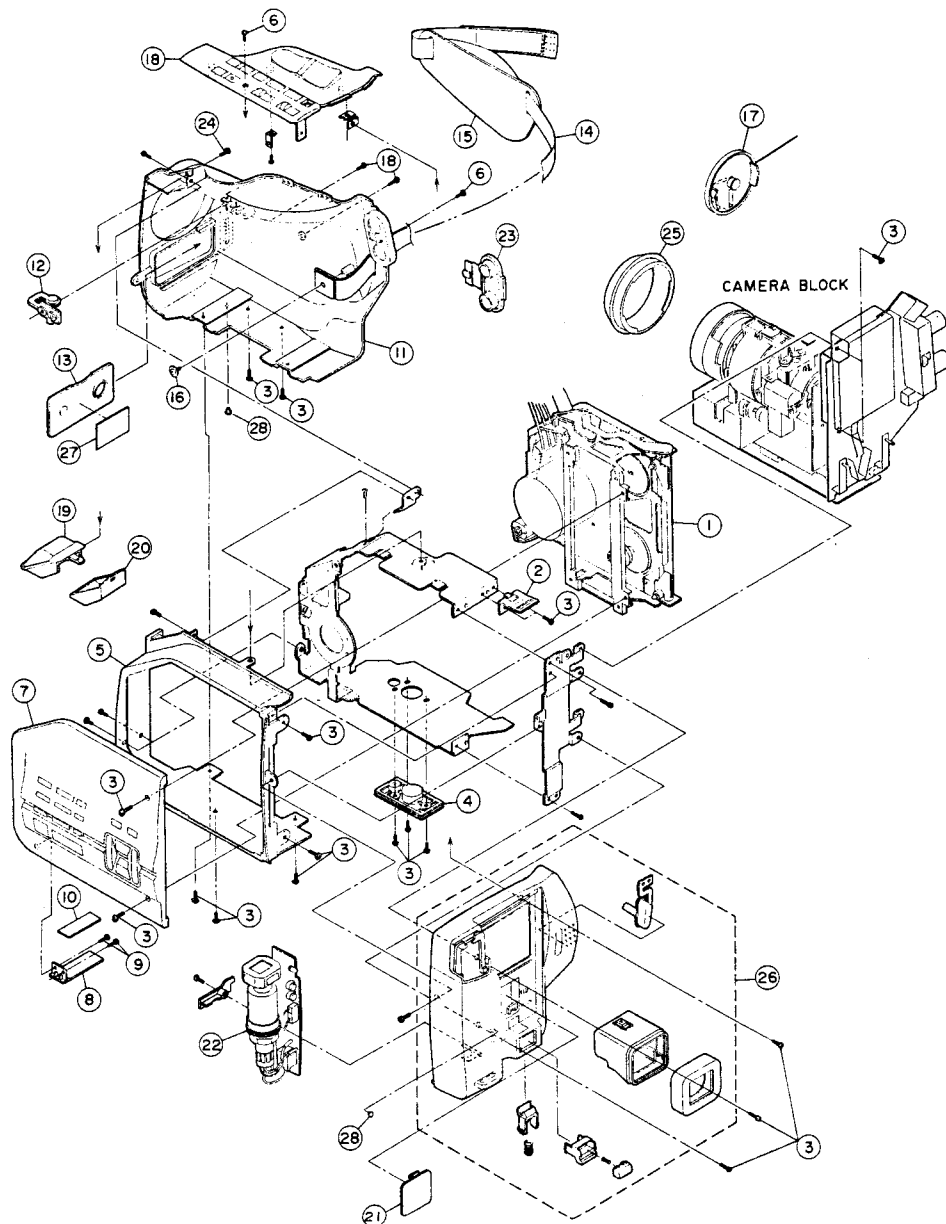
## 9. CCD P.C BOARD

Ref.No.	Part No.	Description
D4	ED-386024J	D SILICON CHIP DA204U
D5	ED-405339J	D SILICON CHIP DA115
D6	ED-405339J	D SILICON CHIP DA115
D9	ED-405339J	D SILICON CHIP DA115
D10	ED-394636J	D VARACTOR CHIP 1SV200
D11	ED-386024J	D SILICON CHIP DA204U
IC2	EI-405353J	IC MN5179
IC3	EI-403517J	IC MN3110SA
IC4	EI-401280J	IC MN73033XRA
IC5	EI-403519J	IC AN2012SB
J1	EJ-403642J	SOCKET C.DIC0-C16A1-SM1
P1	EJ-403808J	PLUG C.53263-2690 26P
TR2	ET-403561J	TR CHIP 2SC4617 R
TR3	ET-403561J	TR CHIP 2SC4617 R
TR5	ET-386027J	TR CHIP 2SA1576 R,S
TR6	ET-403673J	TR D-CHIP UMT2
TR8	ET-403561J	TR CHIP 2SC4617 R
VC1	EC-403809J	C S-FIX CHIP T12 TZB04P300AA
VC2	EC-403809J	C S-FIX CHIP T12 TZB04P300AA
VR1	EV-404158J	R S-FIX C. T08 TMC3KTR 104
X1	EI-403521J	OSC XTAL HC-49/US 19.3125MHZ
X2	EI-393278J	OSC XTAL HC-49/US17.734475MHZ

## 10. POWER P.C BOARD

Ref.No.	Part No.	Description
D601	ED-380715J	D SILICON ERB83-004 40/1.7A
D602	ED-389579J	D SILICON CHIP RB400D
D603	ED-389579J	D SILICON CHIP RB400D
D604	ED-389578J	D SILICON CHIP RB451F T106T08E
D605	ED-389578J	D SILICON CHIP RB451F T106T08E
D606	ED-386045J	D SILICON CHIP RB110C T100T12E
D608	ED-386045J	D SILICON CHIP RB110C T100T12E
D609	ED-392394J	D ZENER CHIP MA3039-H TW
D610	ED-386031J	D SILICON CHIP MA110-TW
D611	ED-386031J	D SILICON CHIP MA110-TW
D612	ED-386045J	D SILICON CHIP RB110C T100T12E
F601	*EF-403589J	FUSE SSFR 125V 3.15A
IC601	EI-403586J	IC BA9702FS
IC602	EI-403590J	IC BA9701F
IC603	EI-403594J	IC MM1036XF
J601	EJ-403683J	PHONE J 1P LGP6501-0100 4.0
		[DC IN]
J602	EJ-403635J	PHONE J 2P HSJ1456-01-210 3.5
		[EAR PHONE]
J603	SE-403636J	JACK PLATE AV OUT SKZ
		[AV OUT]
L601	EO-403798J	COIL FIX 2 S033346 150M
L602	EO-403799J	COIL FIX 2 S033373 220K
L603	EO-403669J	COIL FIX 2 S033371 220L
L604	EO-404014J	COIL FIX 2 S033373 330K
L607	EO-404014J	COIL FIX 2 S033373 330K
L611	EO-404014J	COIL FIX 2 S033373 330K
L612	EO-403800J	COIL FIX 2 S033372 470L
P608	EJ-403635J	PLUG C.53263-1490 14P
P619	EJ-403629J	PLUG C.53263-2292 22P
SW601	ES-403634J	SW TACT SKEYAB
SF601	*EF-404063J	FUSE ICP-F50 50V 2.0A
SF602	*EF-403827J	FUSE COP2E25TE
SF603	*EF-403827J	FUSE COP2E25TE
SF604	*EF-403829J	FUSE COP2E20TE
TB601	EJ-403169J1	TERMINAL BATTERY PART
TB602	EJ-403169J1	TERMINAL BATTERY PART
TB603	EJ-403172J	TERMINAL (+)
TB604	EJ-403173J	TERMINAL (-)
TR601	ET-403831J	TR CHIP 2SB1124 T,U
TR602	ET-403831J	TR CHIP 2SB1124 T,U
TR603	ET-403561J	TR CHIP 2SC4617 R
TR604	ET-403851J	TR CHIP 2SD2150 R,S
TR605	ET-403831J	TR CHIP 2SB1124 T,U
TR606	ET-403831J	TR CHIP 2SB1124 T,U
TR607	ET-403669J	TR CHIP DTC144EE
TR608	ET-386028J	TR CHIP 2SB815 B6 TAT08E
TR609	ET-386028J	TR CHIP 2SB815 B6 TAT08E
TR610	ET-403561J	TR CHIP 2SC4617 R
TR611	ET-403832J	TR CHIP DTC144WU
TR612	ET-403561J	TR CHIP 2SC4617 R
TR613	ET-404139J	TR D-CHIP UMY1
VR601	EV-404156J	R S-FIX C. T08 TMC3KTR 472

## FINAL ASSEMBLY



PARTS LIST

## 11. FINAL ASSEMBLY

Ref.No.	Part No.	Description
1A	BB-403699J	MECHA UP5-1 [C20E]
1B	BB-403697J	MECHA UP9-1 [C40E]
2	SZ-403156J	PLATE SHOULDER
3	ZS-389766J	PAN20X03STL BNI PS1
4	VC-403194J	HOLDER STAND INSERT PART
5A	SP-404912J	CASE (R) 20E [C20E]
5B	SP-403203J	CASE (R) 40E [C40E]
6	ZS-397241J	OCS20X05STL BZN PS3
7A	ES-403715J	SW OPERATION LID 20E [C20E]
7B	ES-403712J	SW OPERATION LID 40E [C40E]
8	SZ-403177J	HOLDER FLEXIBLE
9	ZS-390457J	BT PAN20X04STL BZN
10	SZ-407123J	PLATE GUIDE FLEXIBLE
11A	SP-404891J	CASE (L) 20 [C20E]
11B	SP-403202J	CASE (L) 40 [C40E]
12	SK-403183J	BUTTON MACRO
13	SE-403175J	WINDOW AF
14	VC-403188J	GLIP BELT PART
15	VC-403199J	CUSHION GRIP
16	ZS-404011J	BT PAN20X08STL BZN C070
17A	VC-404051J	CAP LENS (B) PART [C20E]
17B	VC-403181J	CAP LENS (W) PART [C40E]
18A	ES-403710J	SW OPERATION UPPER 20E [C20E]
18B	ES-403707J	SW OPERATION UPPER 40E [C40E]
19	EY-403701J	MIC *V3011
20	SC-406065J	COVER MIC
21	SC-403178J	COVER BATTERY
22	VC-732822J	E.V.F. UNIT C40E
23	SC-403196J	CAP AV OUT
24	ZS-397242J	BT CTS20X08STL BZN
25	VC-403197J	HOOD LENS
26A	BD-732824J	E.V.F. CASE C20E
26B	BD-732823J	E.V.F. CASE C40E
27	SE-407259J	CUSHION AF
28	SP-403185J	COVER AF

### NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 12. ACCESSORY

Ref.No.	Part No.	Description
1A	AV-403719J	AC ADAPTER VA-300EG
1B	AV-403718J	AC ADAPTER VA-300EA
1C	AV-403780J	AC ADAPTER VA-300EK
2	AV-394051J	SHOULDER STRAP SB-100
3	AV-403790J	CORD LLP0083-2000 DC-DC
4	AV-403702J	AV CABLE VW-300

PARTS LIST

# AKAI

MODEL **PVS-C20E**

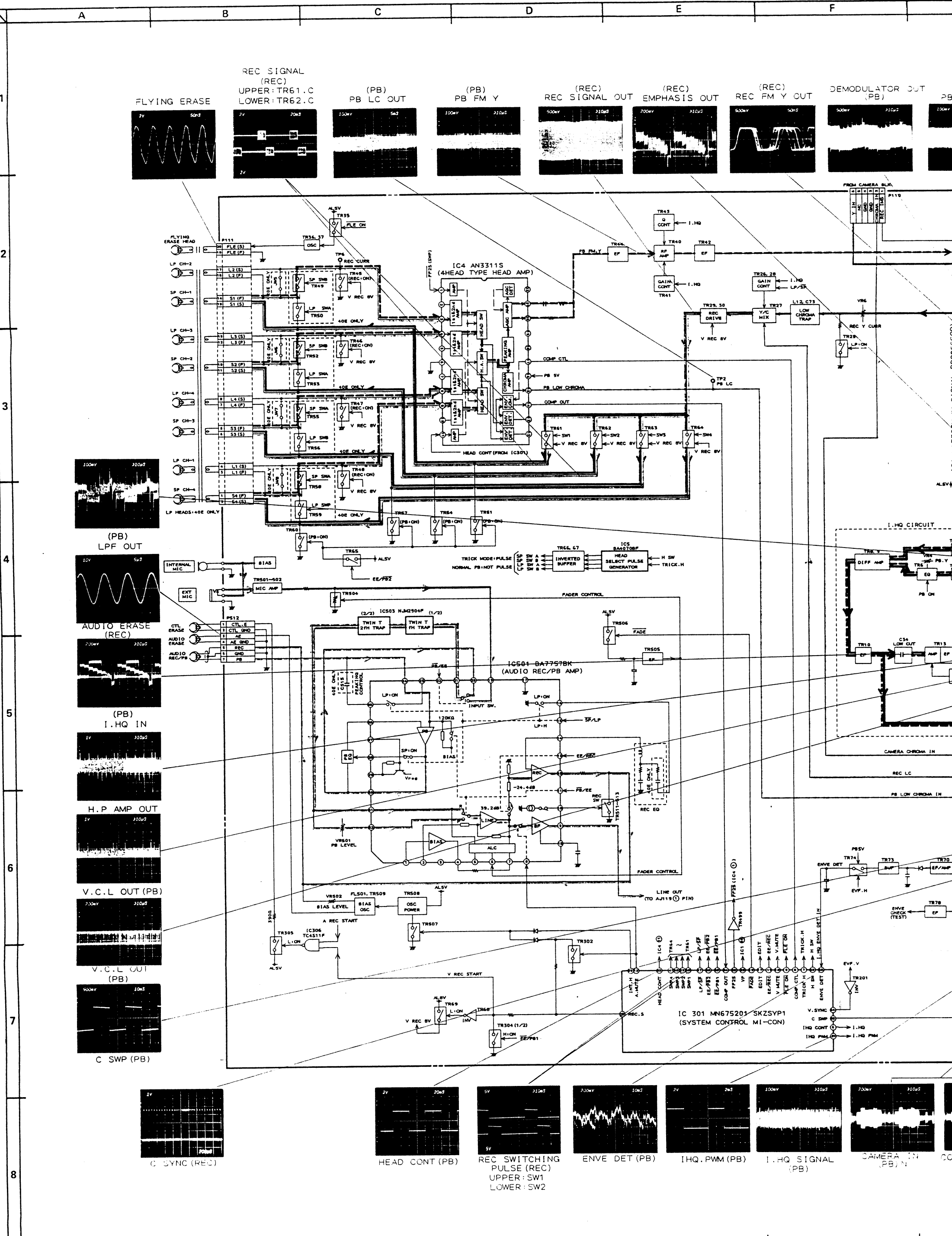
MODEL **PVS-C40E**

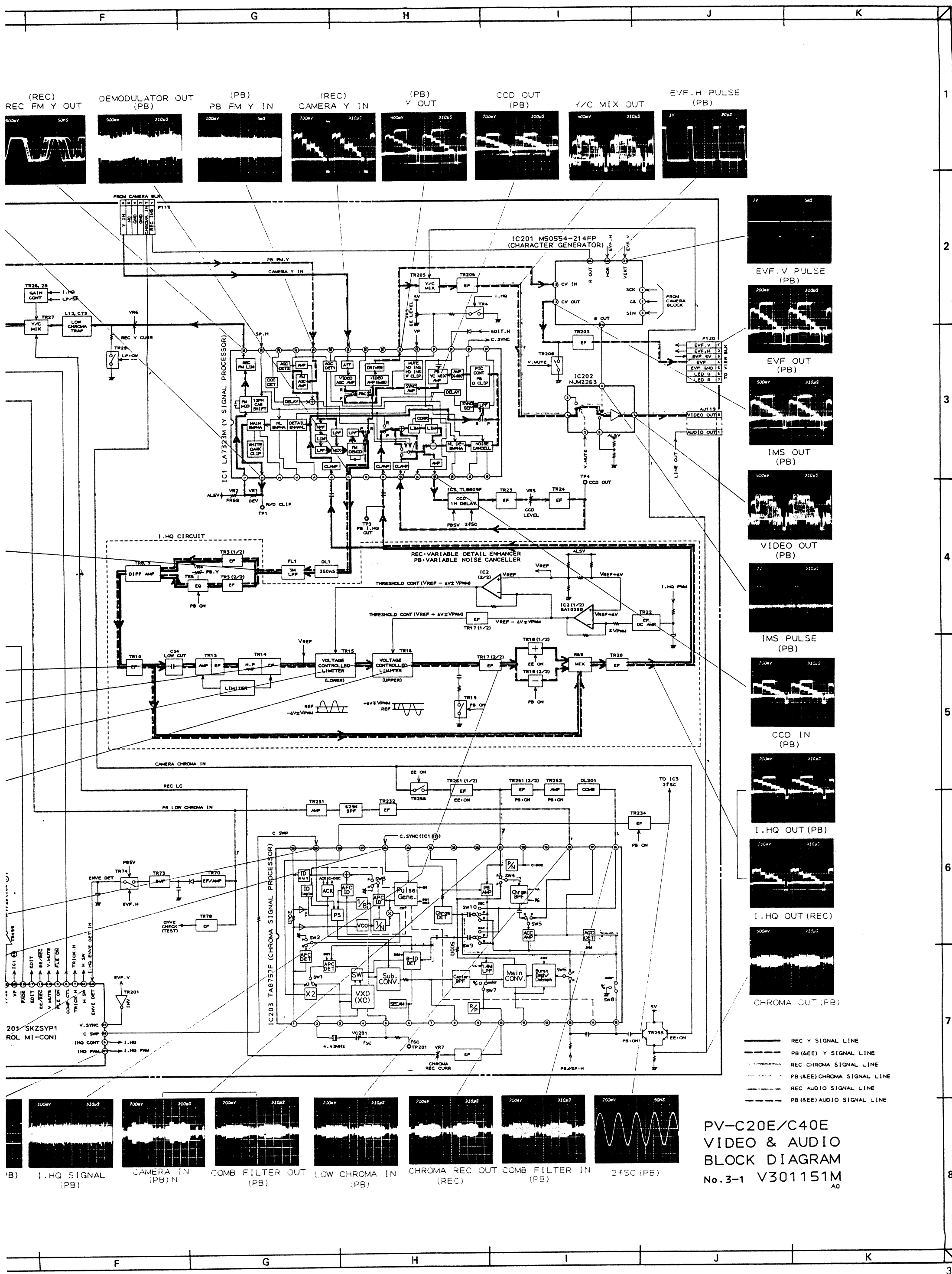
## SCHEMATIC DIAGRAMS AND PC BOARDS

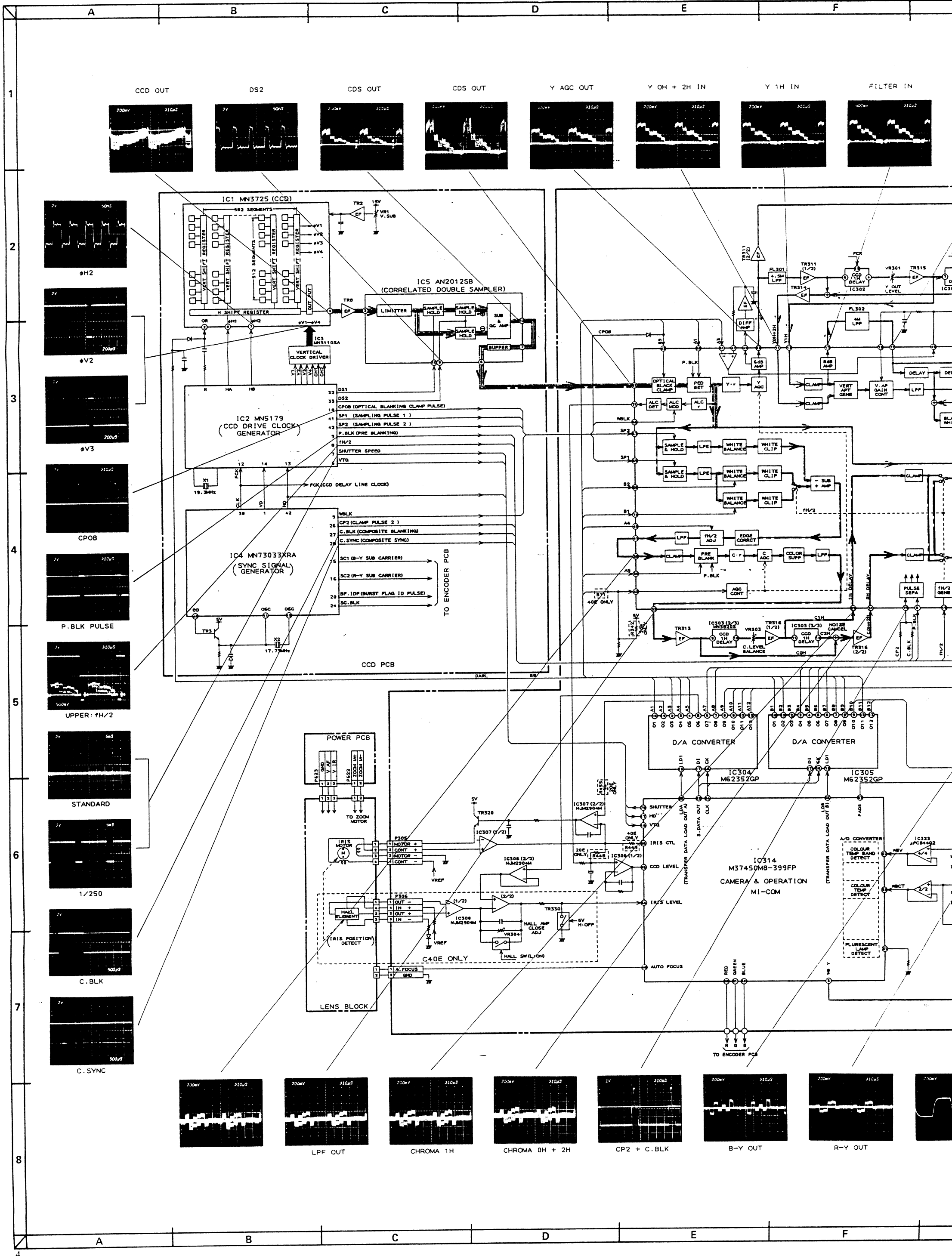
### TABLE OF CONTENTS

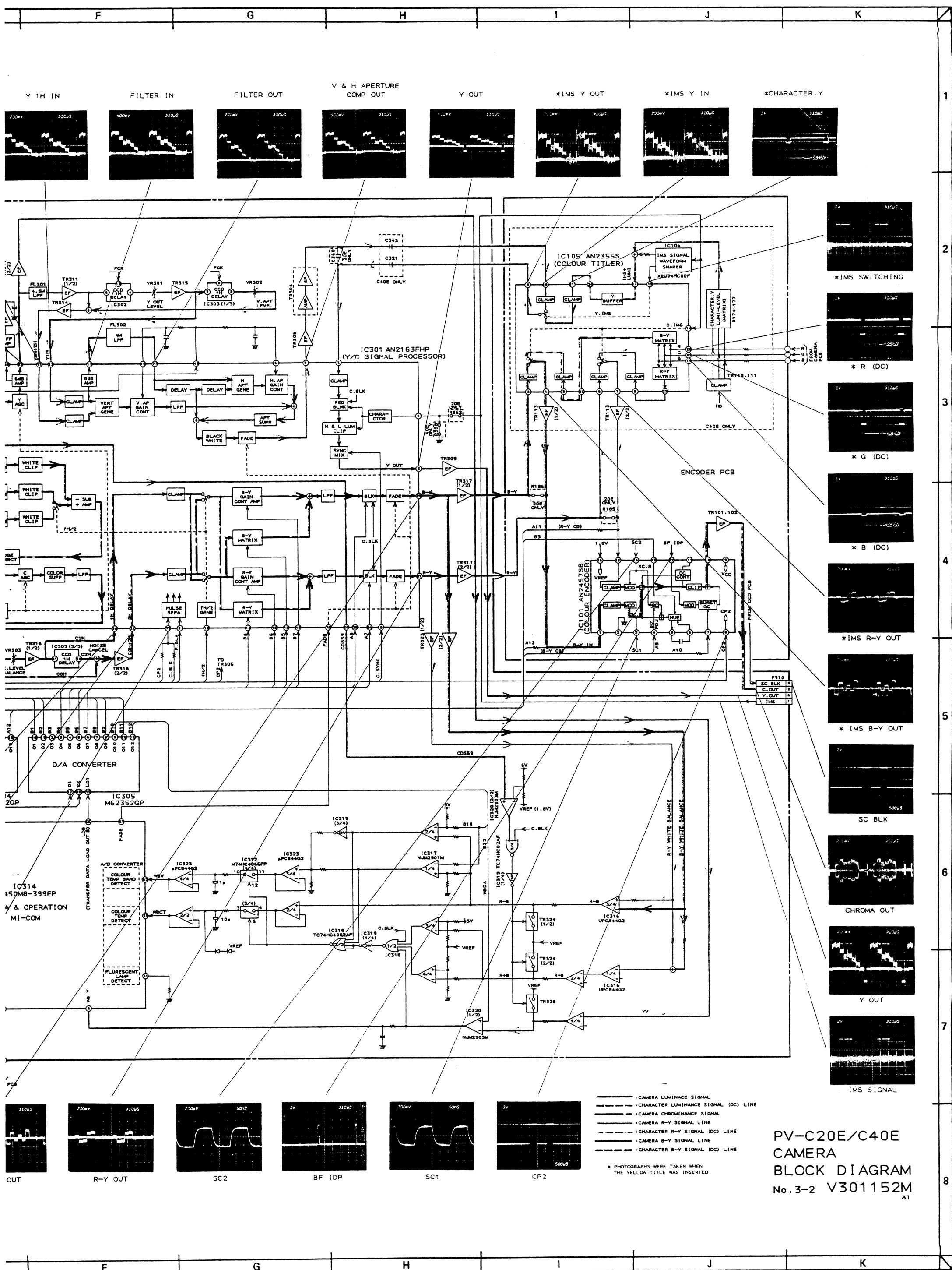
I. BLOCK DIAGRAMS	
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2. CAMERA .....	4
3. SERVO & SYSCON .....	5
II. SCHEMATIC DIAGRAMS AND PC BOARDS	
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2. POWER .....	8
3. CAMERA (1/2) .....	10
4. CAMERA (2/2) .....	12
5. CCD .....	14
6. ENCODER .....	17
7. MAIN (1/4) .....	18
8. MAIN (2/4) .....	19
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Use the following schematic diagrams and PC boards together with the provided service manual.

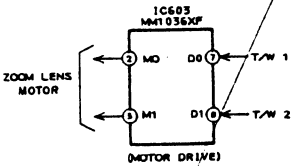
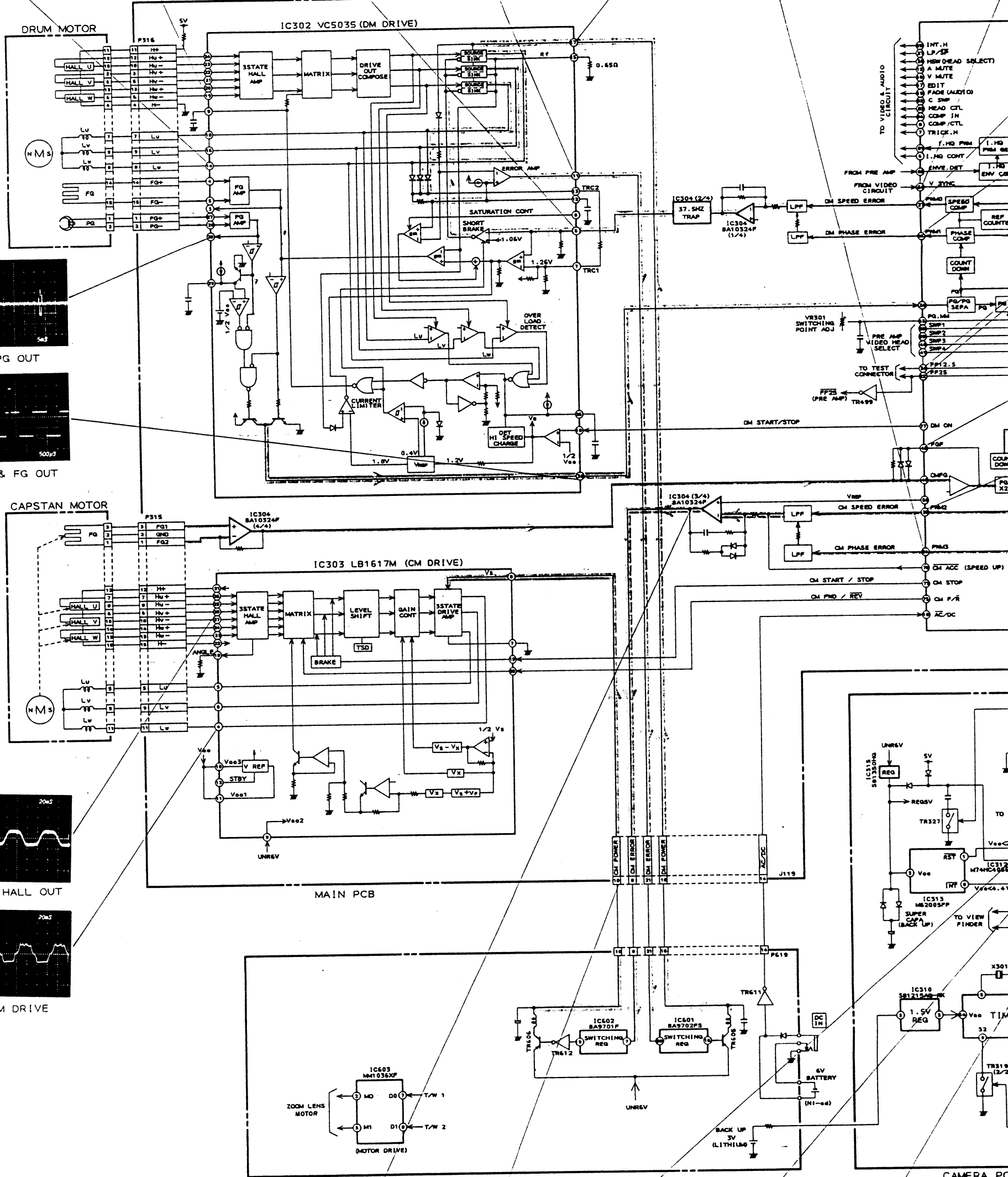
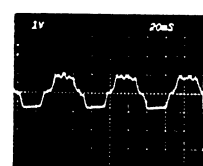
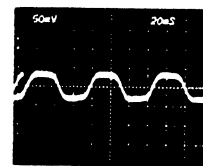
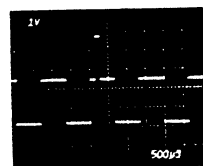
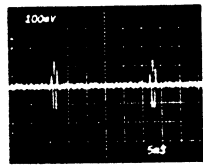
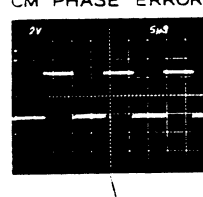
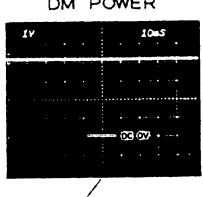
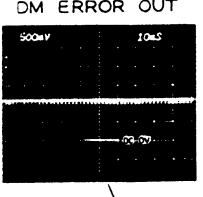
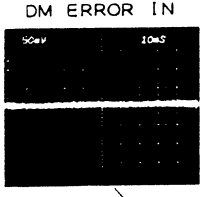
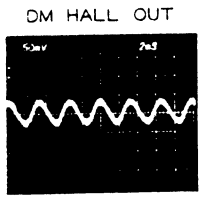
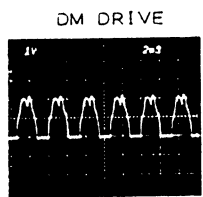




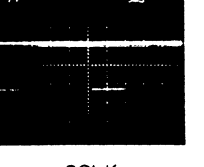
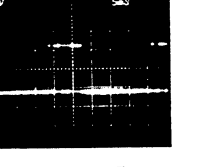
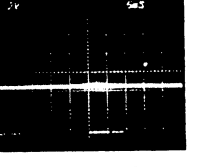
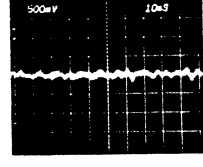
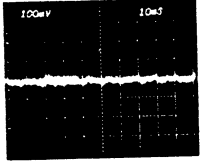




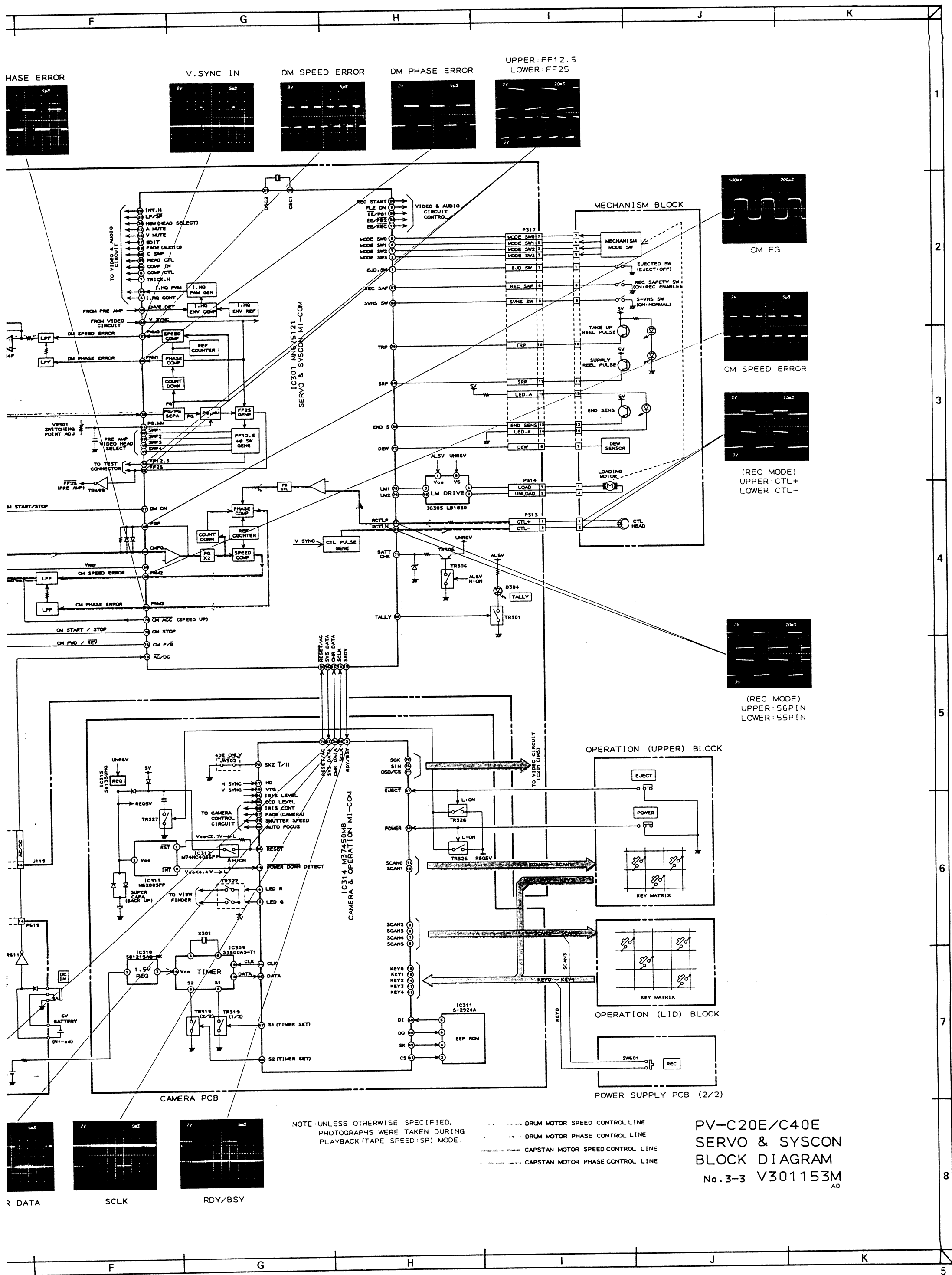




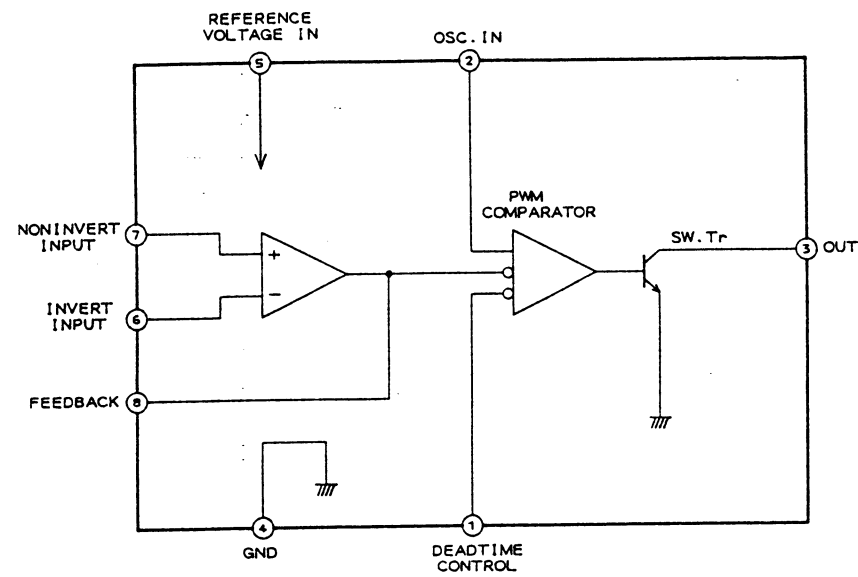
POWER SUPPLY PCB (1/2)



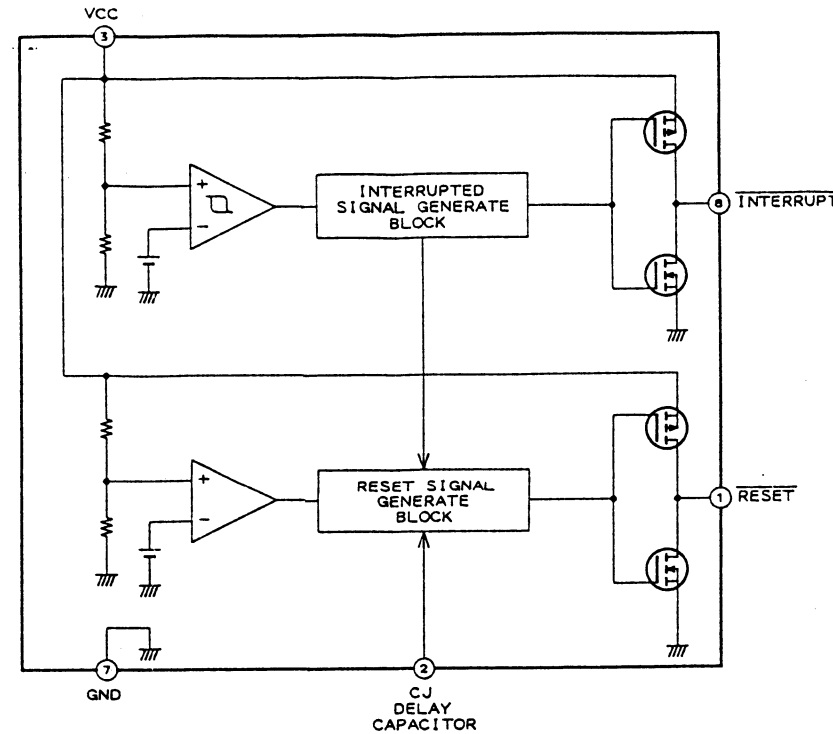




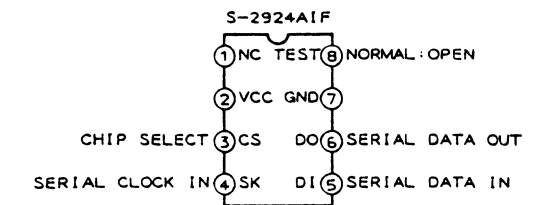
BA9701F (SWITCHING REGULATOR)



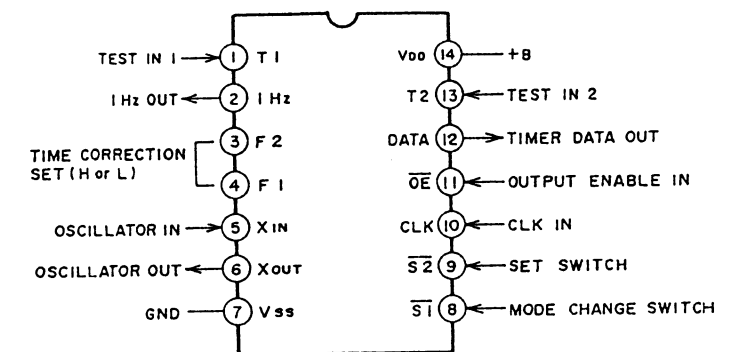
M62005FP (MI-COM SYSTEM RESET)



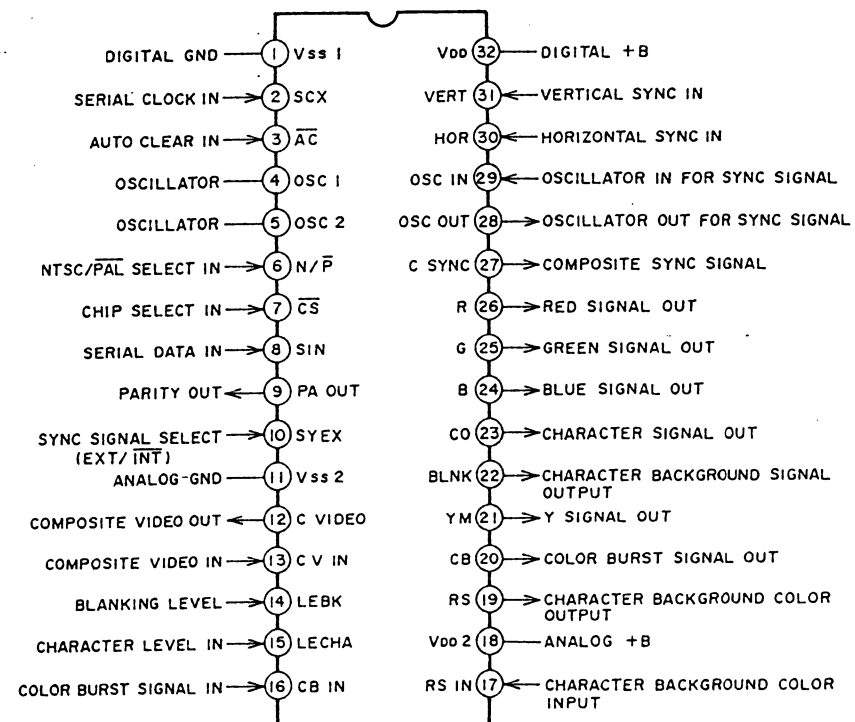
S-2924AIF (EEP-ROM)



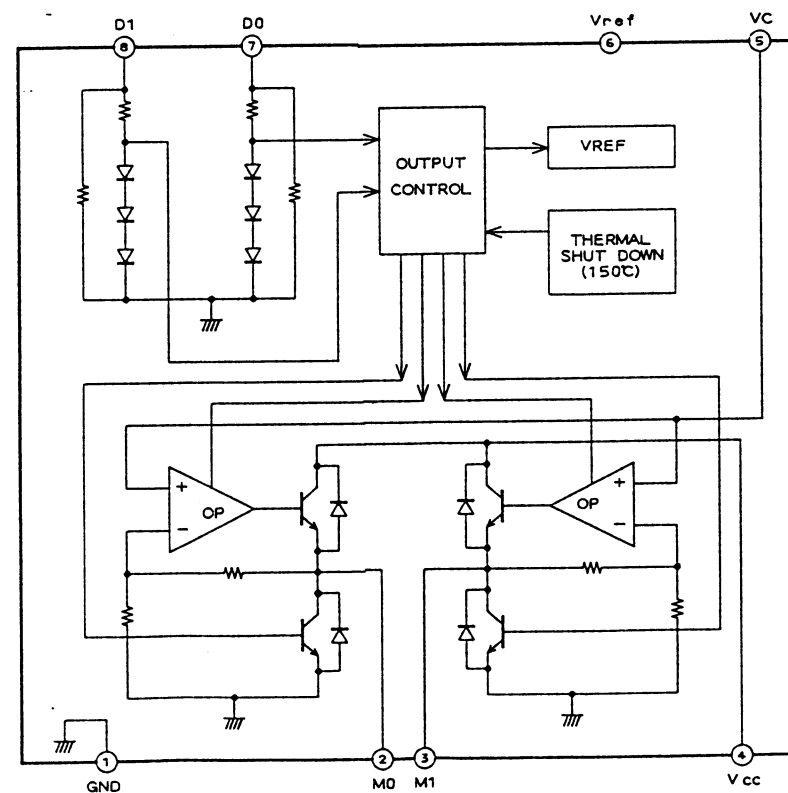
S3500A3 (SERIAL OUT TIMER IC)



M50554-214FP (CHARACTER GENERATOR)



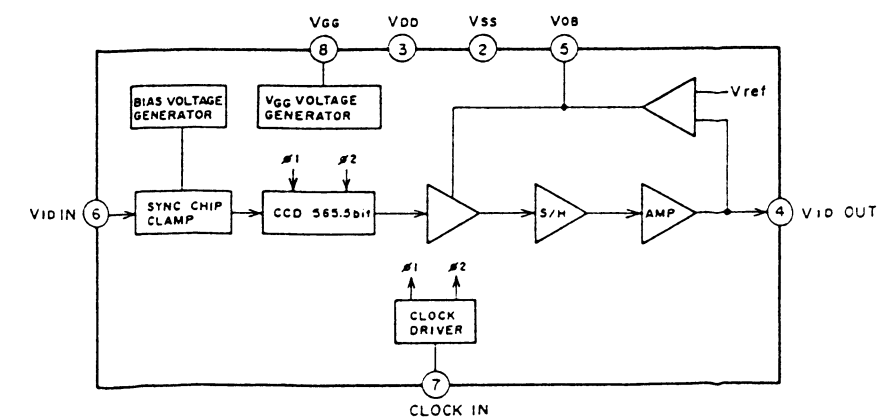
MM1036XF (MOTOR DRIVER)

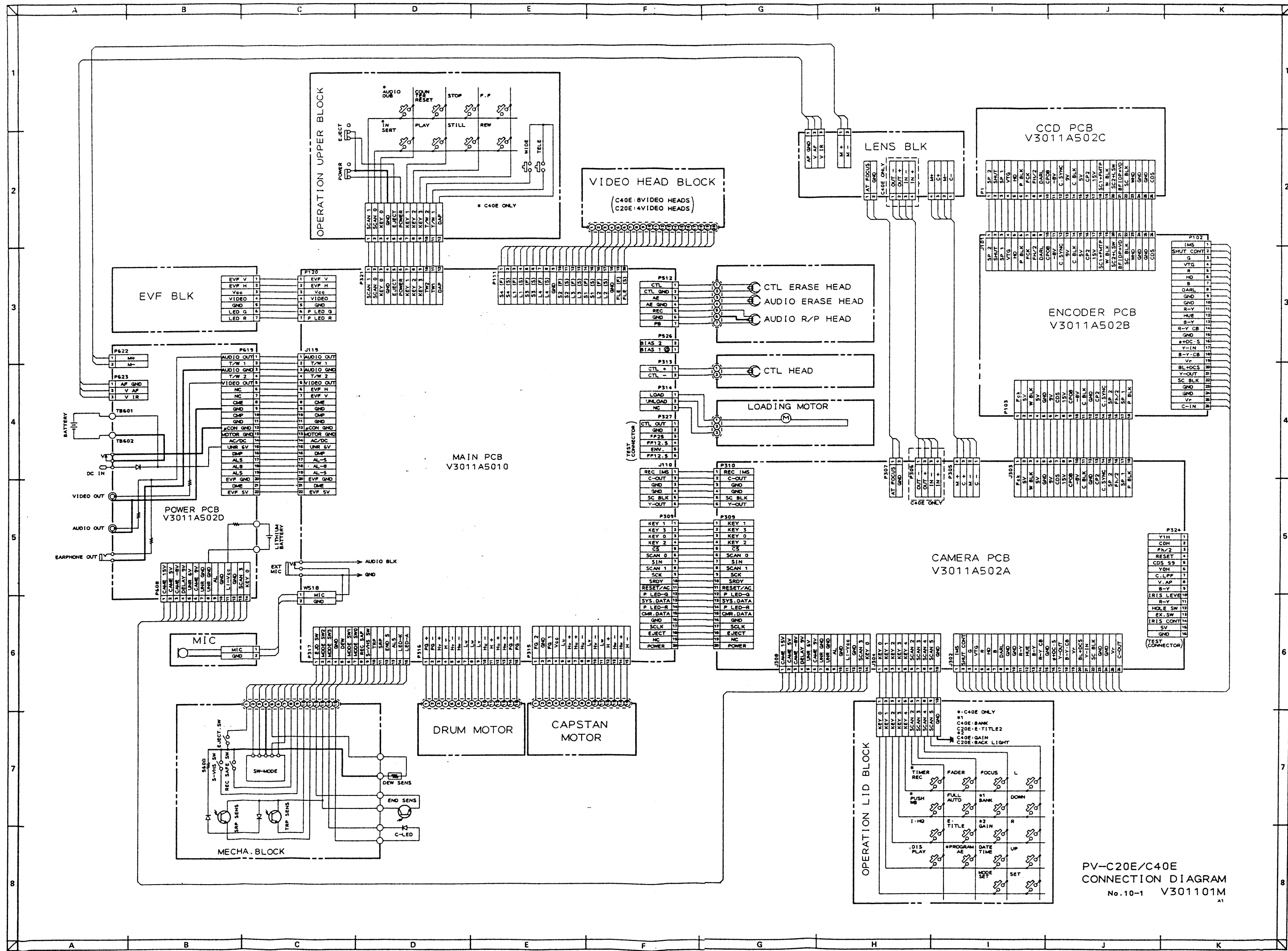


TRUTH TABLE

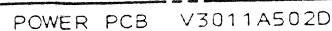
D0	D1	MODE	M0	M1
L	L	OPEN	L	L
H	L	NORMAL	H	L
L	H	REVERSE	L	H
H	H	BRAKE	L	L

TL8809F (CCD 1H DELAY LINE)





PV-C20E/C40E  
CONNECTION DIAGRAM  
No.10-1 V301101M  
A1

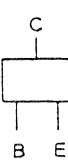


NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS 1/16W(U)  
ALL CAPACITORS IN  $\mu$ F 50WV(M)  
ALL INDUCTORS IN  $\mu$ H(K)

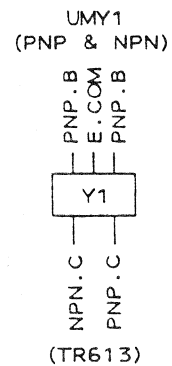
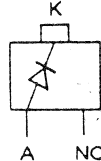
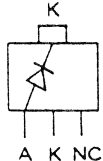
INDICATED VOLTAGES WERE  
MEASURED DURING PB MODE.  
(TAPE SPEED:SP)  
POWER WAS SUPPLIED FROM  
THE AC ADAPTOR

PV-C20E/C40E  
POWER  
SCHEMATIC DIAGRAM  
No.10-2 V301102M

SINGLE CHIP  
TRANSISTOR



CHIP DIODE



## PRINCIPAL PARTS LOCATION

### ICS

IC601 ..... B4,5  
IC602 ..... B5  
IC603 ..... A2

### DIODES

D606 ..... B5  
D609 ..... C1  
D610 ..... C2  
D611 ..... C5  
D612 ..... C2  
D613 ..... C2

### CONNECTORS

P608 ..... B1  
P619 ..... C4,5  
P622 ..... A2  
P623 ..... B1

### SEMI-CONDUCTOR FUSE

SF602 ..... A4  
SF603 ..... A4  
SF604 ..... B3

### TRANSISTORS

TR607 ..... B2,3  
TR608 ..... B2,3  
TR609 ..... C1  
TR610 ..... C1  
TR611 ..... A5  
TR612 ..... B5  
TR613 ..... C4

### TRANSFORMER

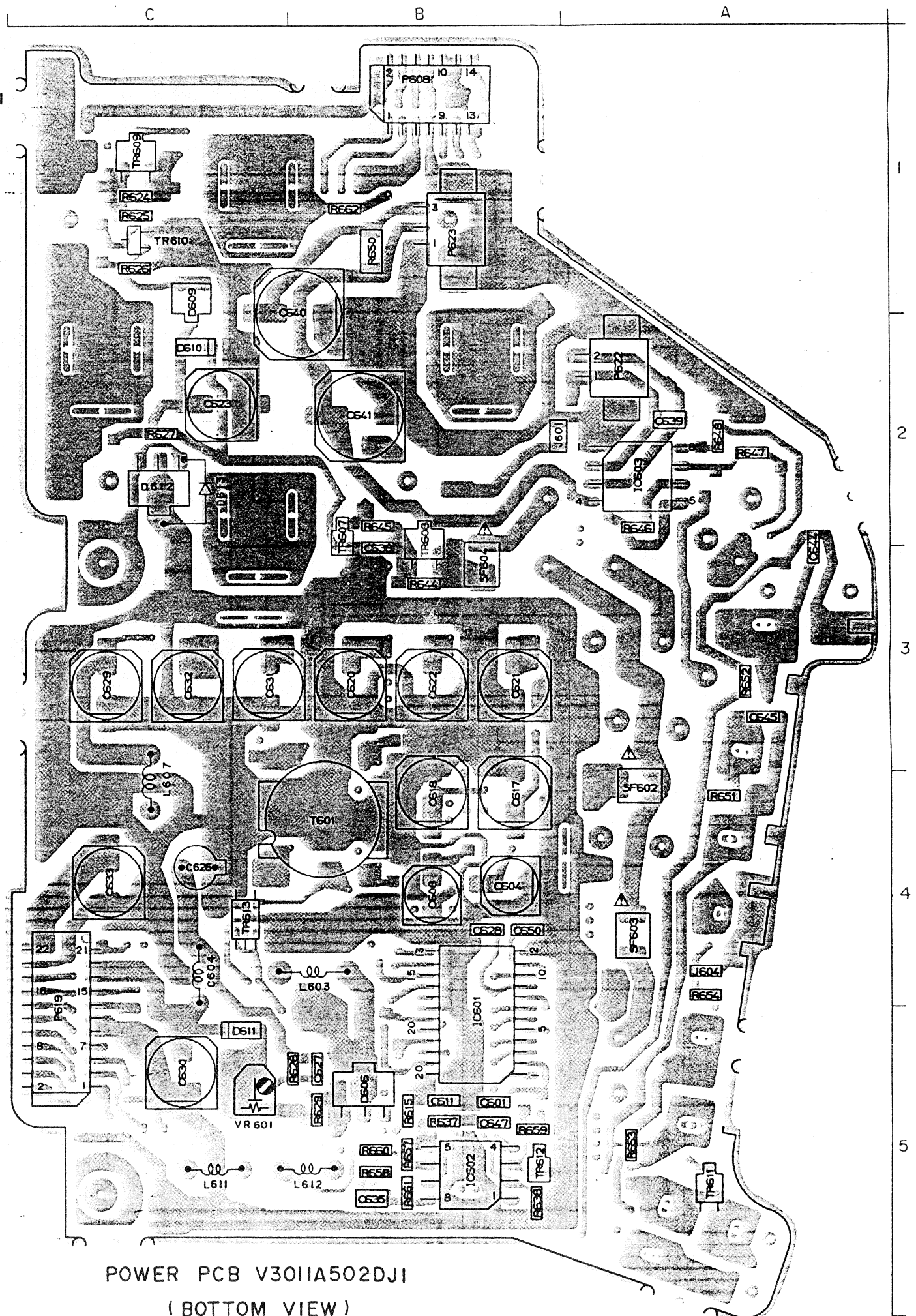
T601 ..... B,C4

### VARIABLE RESISTOR

VR601 ..... C5

### INDUCTORS

L603 ..... B4  
L604 ..... C4  
L607 ..... C3,4  
L611 ..... C5  
L612 ..... B5

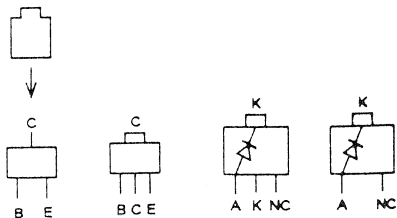


WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.



SINGLE CHIP  
TRANSISTOR



PRINCIPAL PARTS LOCATION

CONNECTORS

J601 ..... C5  
J602 ..... C3  
J603 ..... C4

FUSE

F601 ..... B,C2

DIODES

D601 ..... C3  
D602 ..... A4  
D603 ..... B4  
D604 ..... B3  
D605 ..... B3  
D607 ..... A5  
D608 ..... B5

SEMI-CONDUCTOR FUSE

SF601 ..... B3

SWITCH

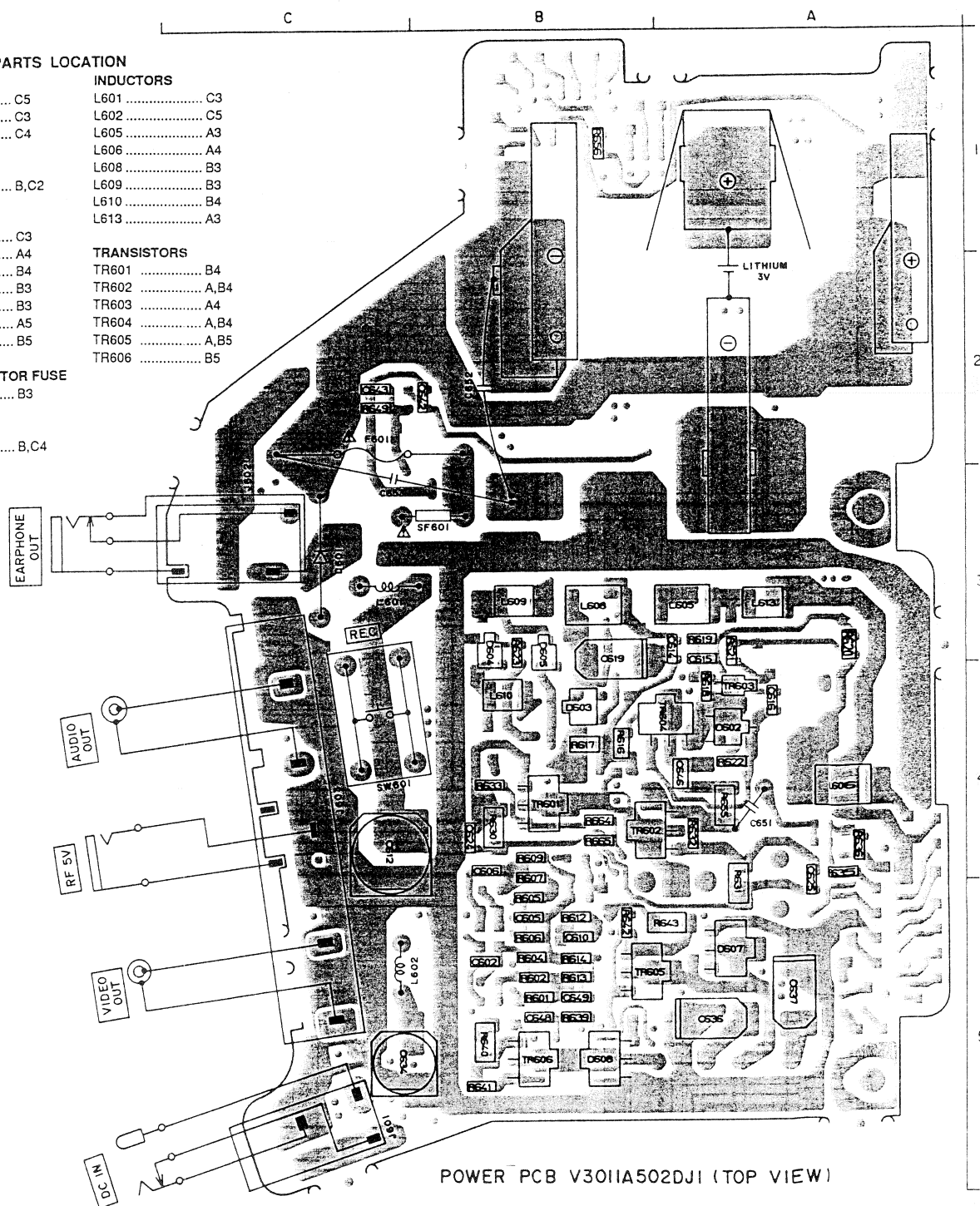
SW601 ..... B,C4

INDUCTORS

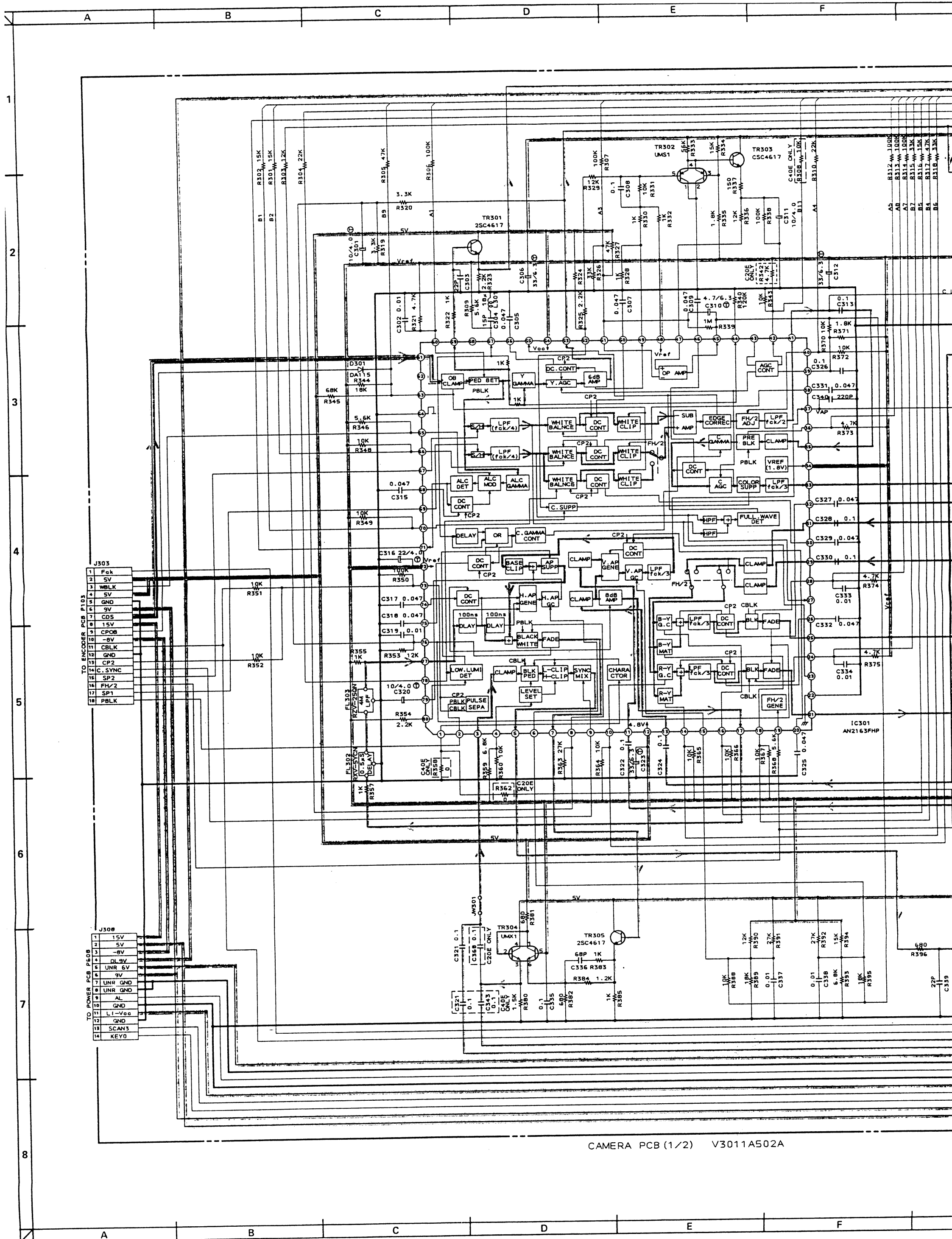
L601 ..... C3  
L602 ..... C5  
L605 ..... A3  
L606 ..... A4  
L608 ..... B3  
L609 ..... B3  
L610 ..... B4  
L613 ..... A3

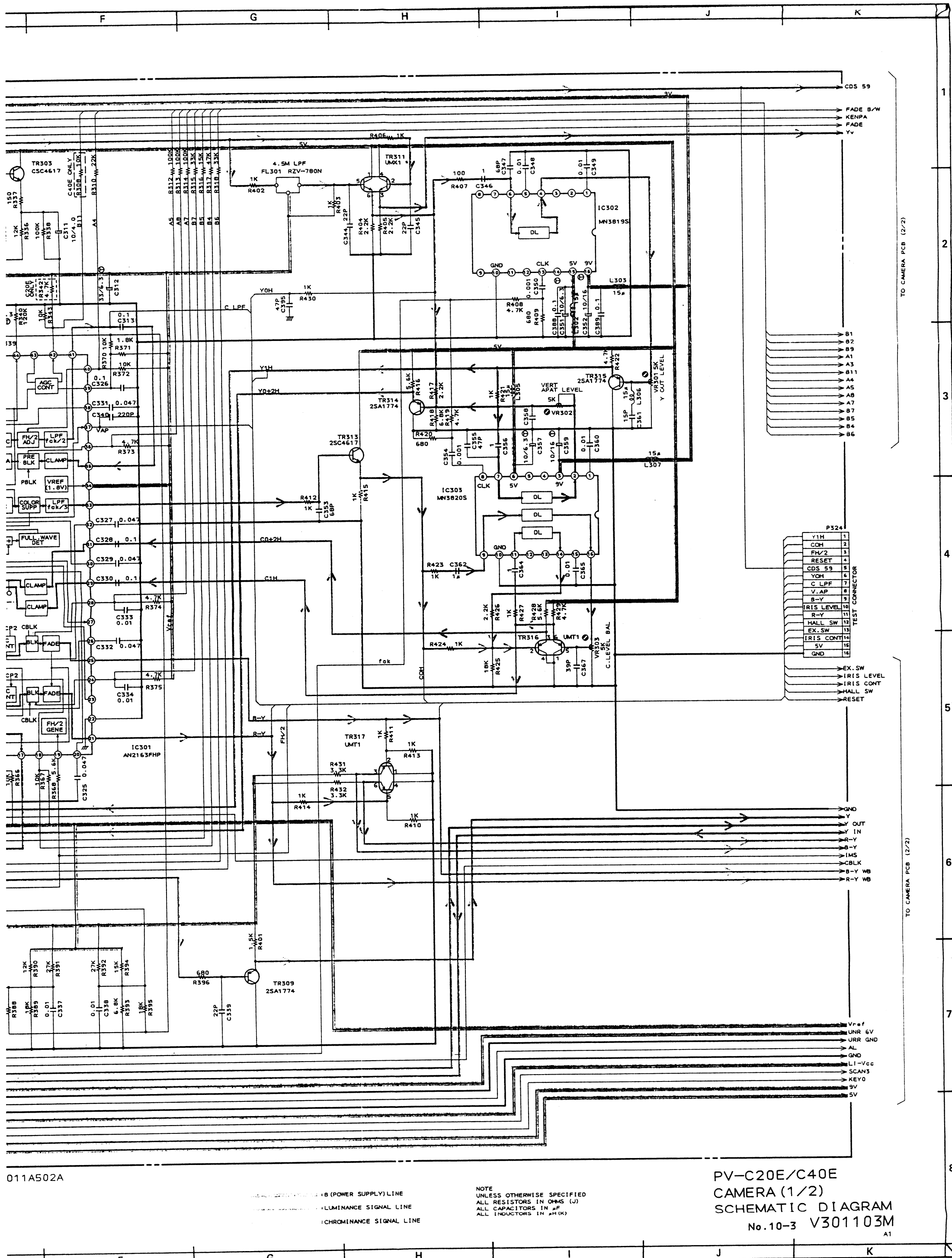
TRANSISTORS

TR601 ..... B4  
TR602 ..... A,B4  
TR603 ..... A4  
TR604 ..... A,B4  
TR605 ..... A,B5  
TR606 ..... B5



POWER PCB V3011A502DJ1 (TOP VIEW)





PV-C20E/C40E  
CAMERA (1/2)  
SCHEMATIC DIAGRAM  
No. 10-3 V301103M  
A1

NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (J)  
ALL CAPACITORS IN  $\mu$ F  
ALL INDUCTORS IN  $\mu$ H (K)

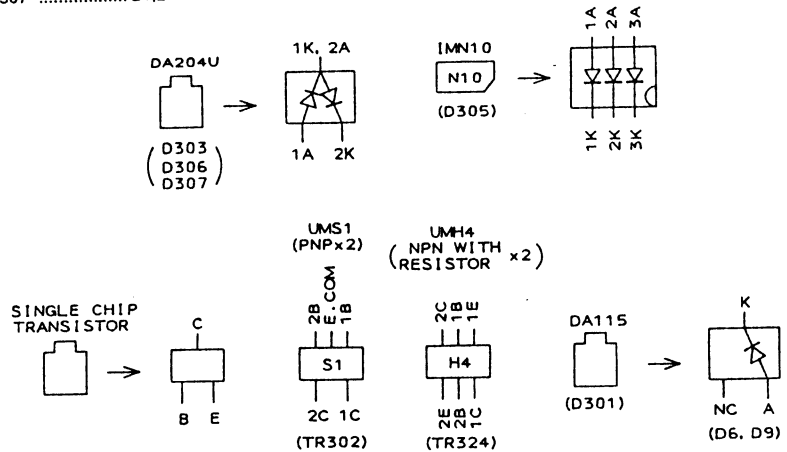
1B (POWER SUPPLY) LINE  
LUMINANCE SIGNAL LINE  
CHROMINANCE SIGNAL LINE

011A502A



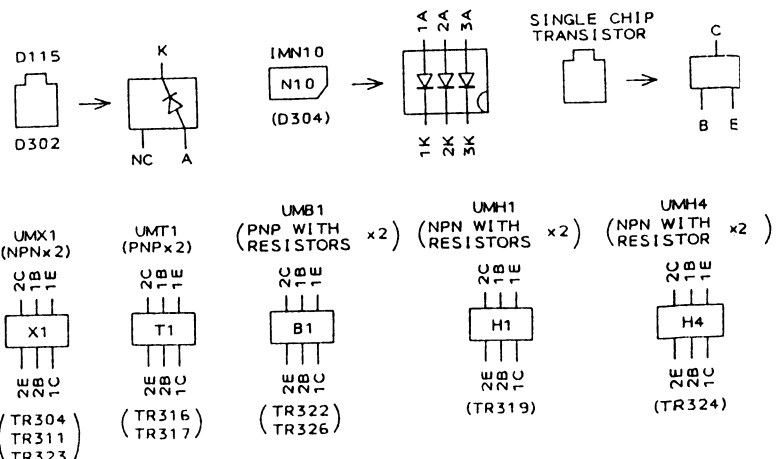
# PRINCIPAL PARTS LOCATION

<b>ICS</b>		<b>INTEGRATED BLOCKS</b>		<b>TRANSISTORS</b>		<b>INDUCTORS</b>	
IC301	D1,2	IB301	A2	TR301	E1	L301	D1
IC304	C2	IB302	A,B2	TR302	D1	L302	E1
IC305	C1,2	IB303	A2	TR303	C1	L303	E1
IC307	B2	IB305	A1	TR315	E1	L305	E2
IC308	B1	IB306	A1	TR320	B2	L306	E1
IC311	A2	IB307	A2	TR321	E2	L307	E2
IC312	B2	IB308	A2	TR324	A1	L310	A,B2
IC313	A2	IB309	A2	TR330	B1		
IC317	A1	IB310	A2				
IC318	A1,2	IB311	A2				
IC319	A1,2			<b>VARIABLE RESISTORS</b>			
IC320	A2	<b>CONNECTORS</b>		VR301	E1		
IC323	B2	J302	C1	VR302	E1		
		J303	E2	VR303	E1,2		
		J308	E2	VR304	E2		
<b>DIODES</b>		<b>FILTERS</b>		<b>X-TAL</b>			
D301	E1	FL301	D,E1	X302	A2		
D303	A,B2	FL302	C,D2				
D305	A1	FL303	D2				
D306	B1,2						
D307	B1,2						

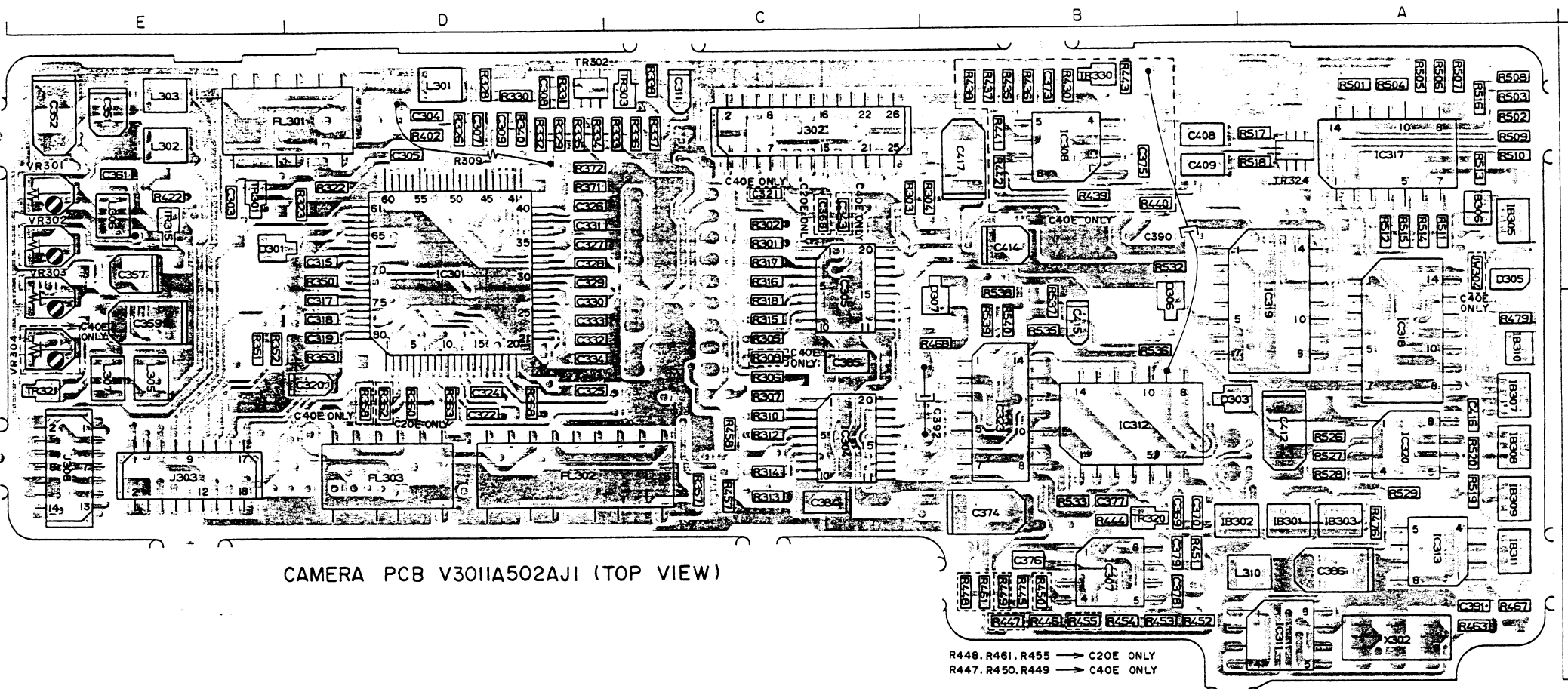


## PRINCIPAL PARTS LOCATION

<b>ICS</b>		<b>TRANSISTORS</b>		<b>CONNECTORS</b>	
IC302	A1	TR304	B2	J304	E1
IC303	A1,2	TR305	B2	P305	D2
IC306	C2	TR309	A1	P306	D1
IC309	D2	TR311	A1	P307	D2
IC310	D2	TR313	A2	P309	D,E1
IC314	E2	TR314	A1	P310	B1
IC315	D2	TR316	A2	P324	A,B2
IC316	D1	TR317	C1		
		TR319	D2		
		TR322	D1		
		TR323	D2		
		TR325	C2		
		TR326	D1		
		TR327	D1		
<b>DIODES</b>		<b>X-TAL</b>			
D302	C,D1	X301	D2		
D304	E1				
<b>INTEGRATED BLOCKS</b>					
IB304	D2				
IB312	D,E2				
<b>INDUCTORS</b>					
L309	C2				
L311	D1				

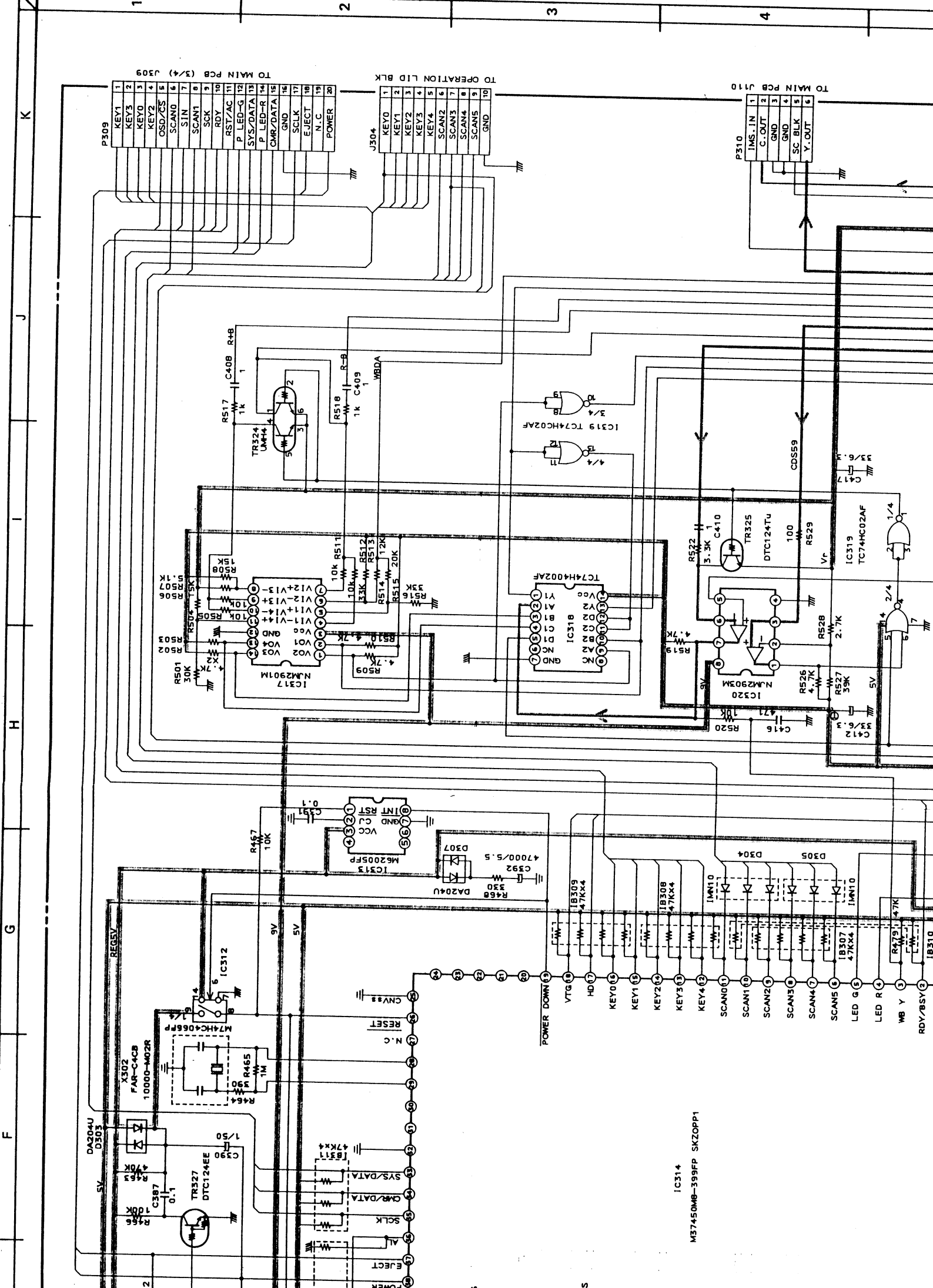




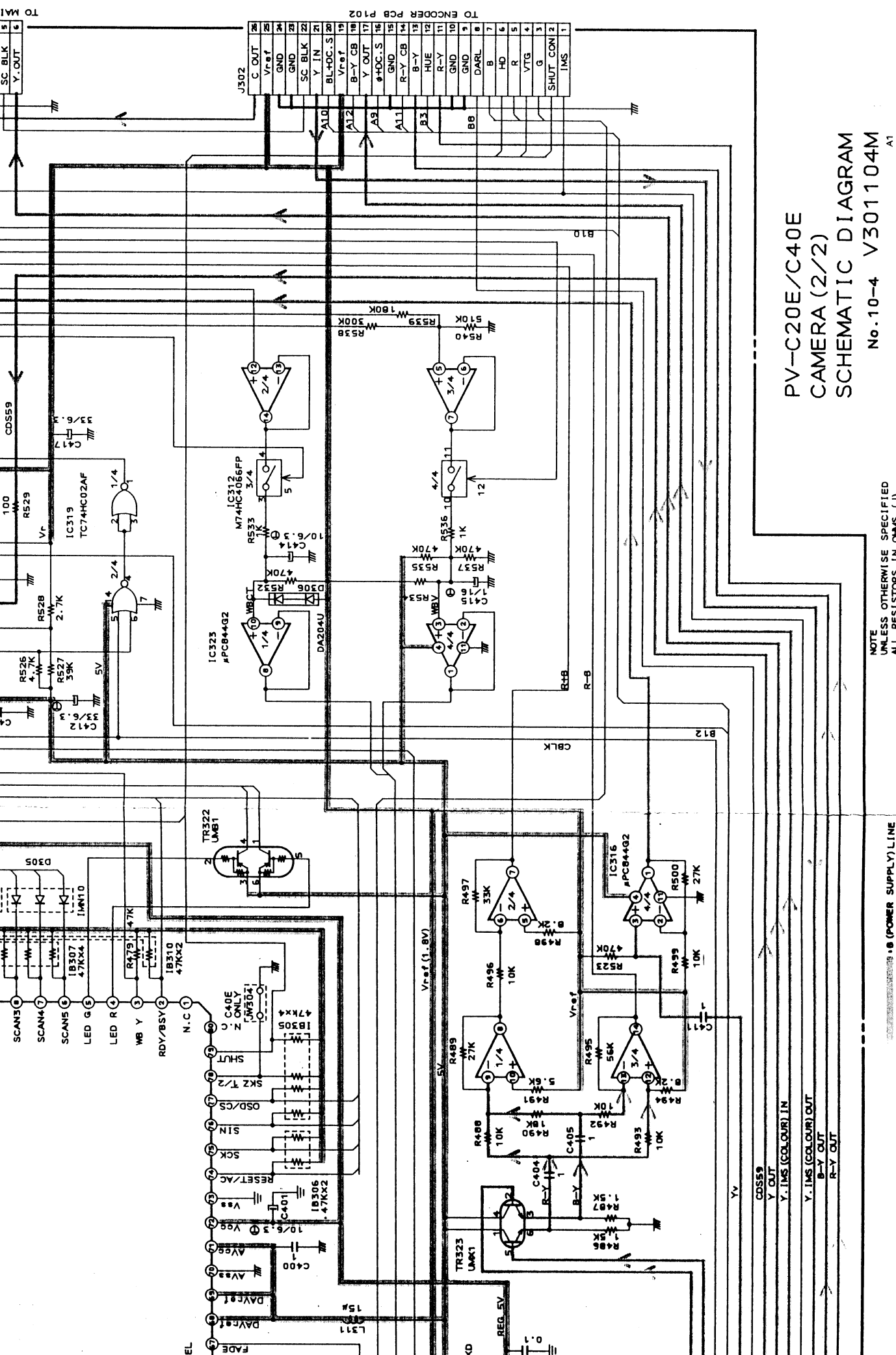


CAMERA PCB V301IA502AJI (TOP VIEW)







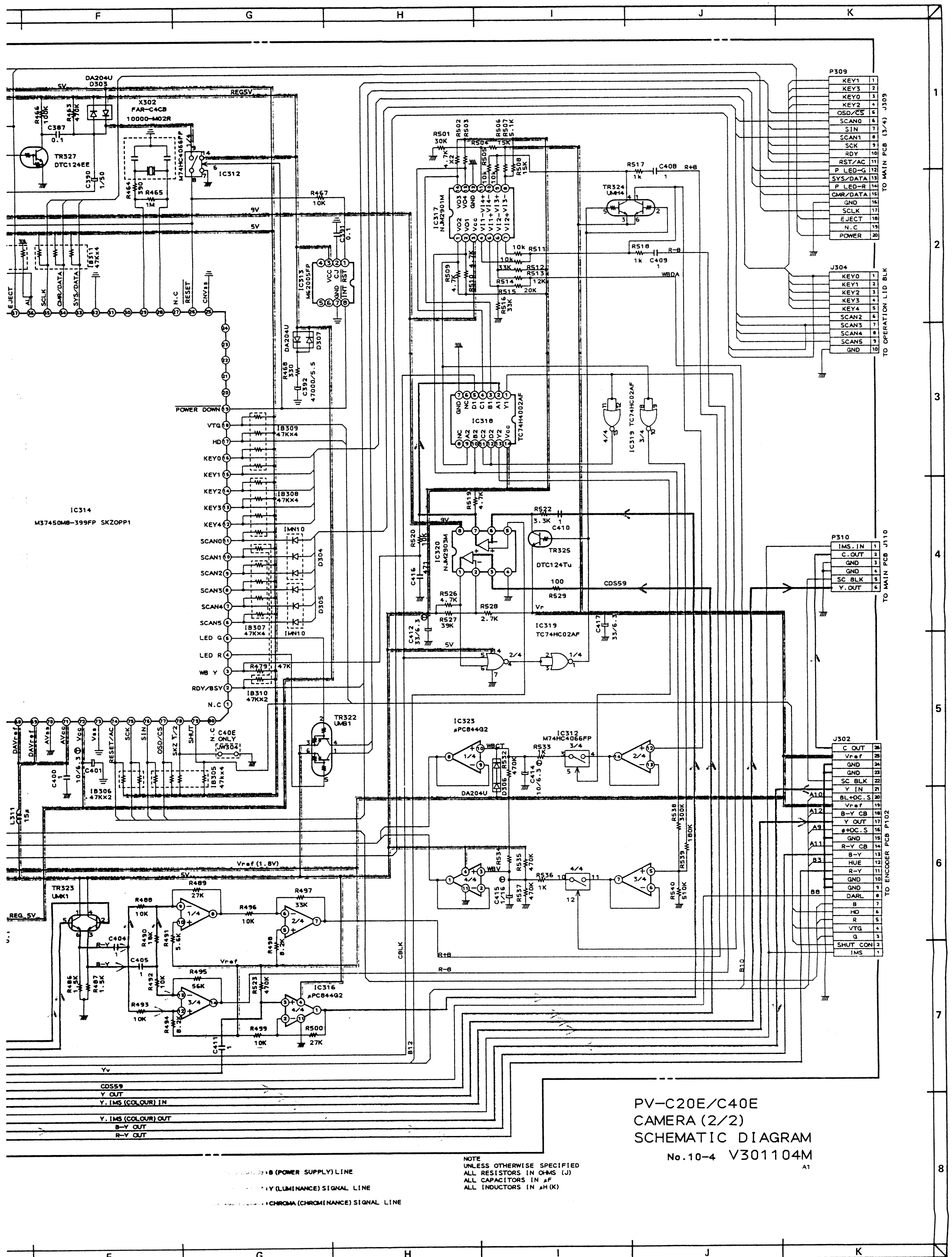


# PV-C20E/C40E CAMERA (2/2) SCHEMATIC DIAGRAM No.10-4 V301104M A1

NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (Ω)  
ALL CAPACITORS IN μF  
ALL INDUCTORS IN μH (μ)

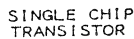
1.8 (POWER SUPPLY) LINE  
1.9 (LUMINANCE) SIGNAL LINE  
1.10 (CHROMA (CHROMANCE) SIGNAL LINE



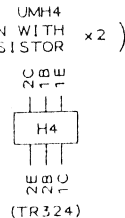
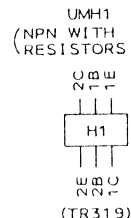
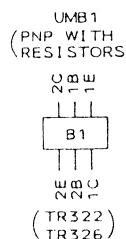
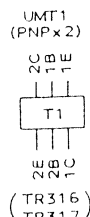
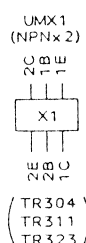
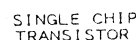
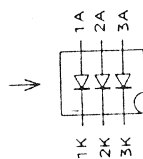
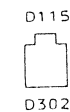




DIODES	
D301 .....	E1
D303 .....	A,B2
D305 .....	A1
D306 .....	B1,2
D307 .....	B1,2



DIODES  
D302 ..... C,D1  
D304 ..... E1



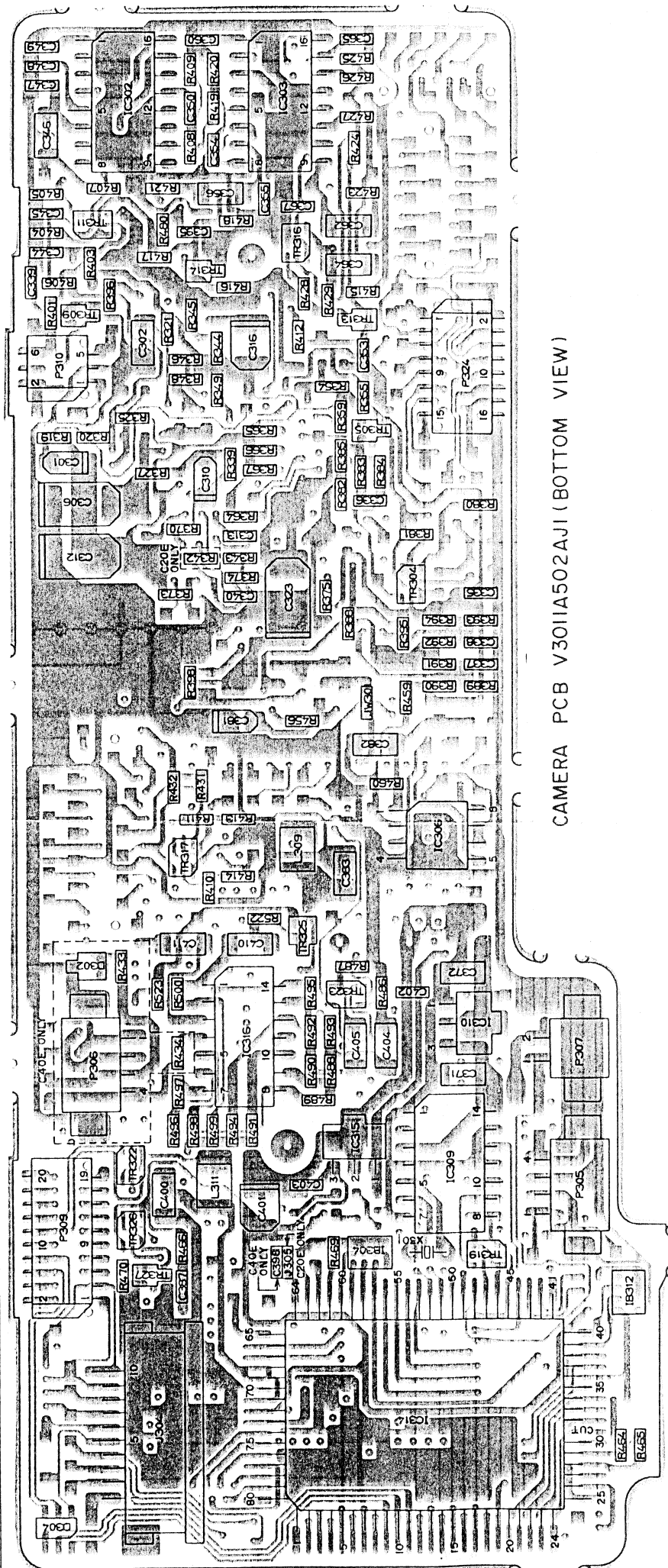
A

B

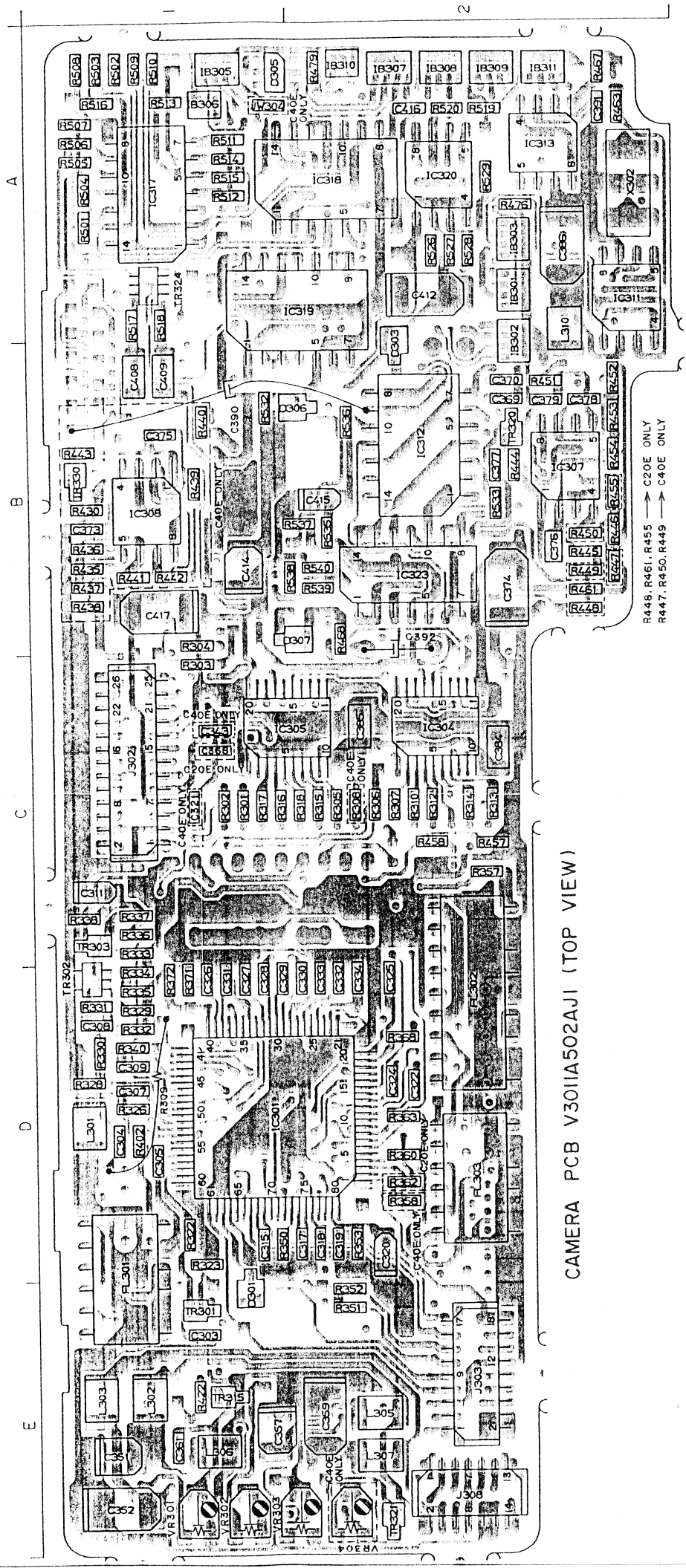
C

D

E

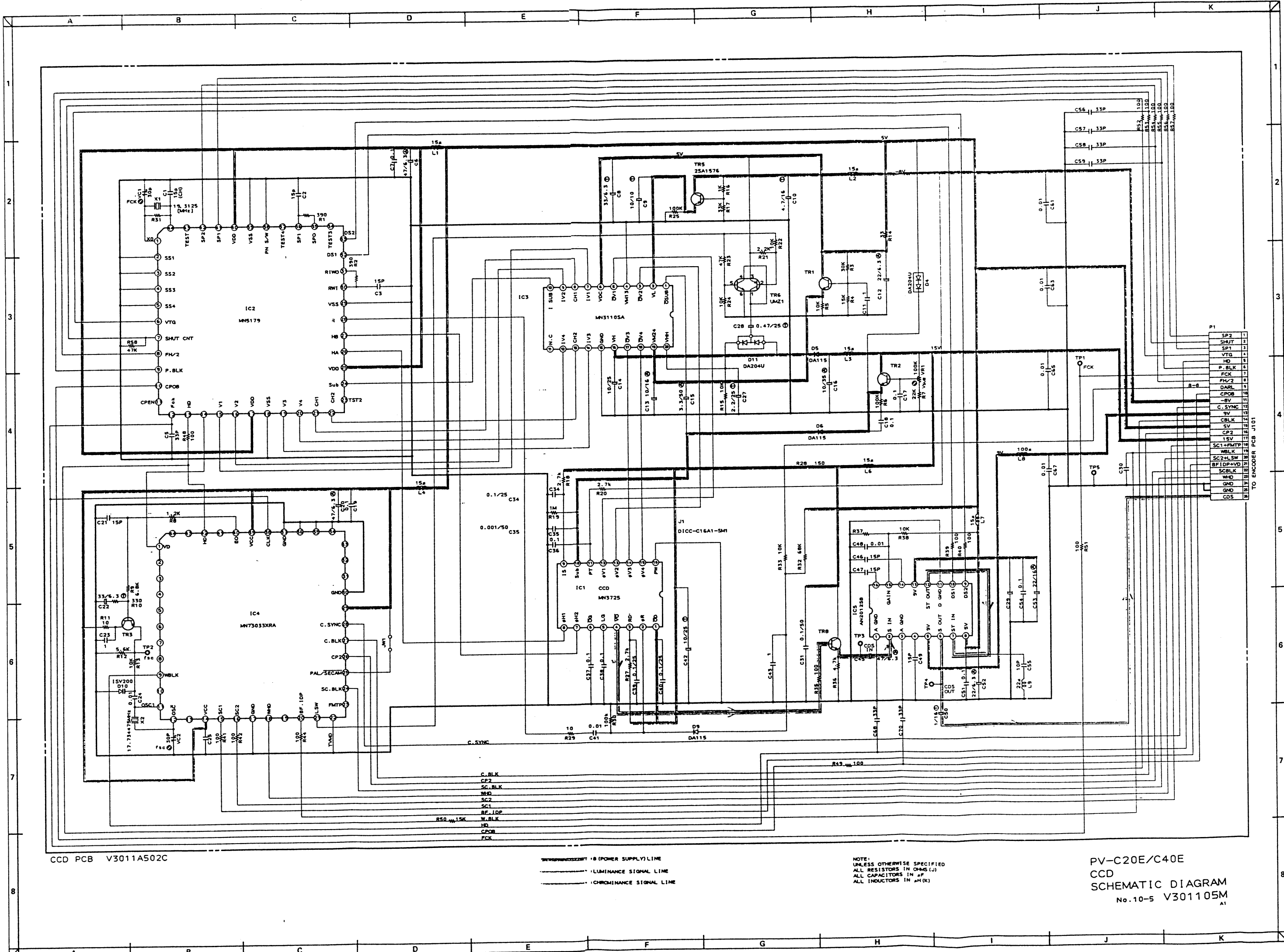


CAMERA PCB V301IA502AJI (BOTTOM VIEW)



CAMERA PCB V30IIA502AJ1 (TOP VIEW)





CCD PCB V3011A502C

——— (POWER SUPPLY) LINE  
- - - - - LUMINANCE SIGNAL LINE  
· · · · · CHROMINANCE SIGNAL LINE

NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (Ω)  
ALL CAPACITORS IN μF  
ALL INDUCTORS IN μH (μ)

PV-C20E/C40E  
CCD  
SCHEMATIC DIAGRAM  
No.10-5 V301105M  
A1

# PRINCIPAL PARTS LOCATION

## DIODES

D5 ..... A1  
D10 ..... C1

## INDUCTORS

L3 ..... A1  
L4 ..... C2  
L7 ..... B1  
L8 ..... B2

## CONNECTOR

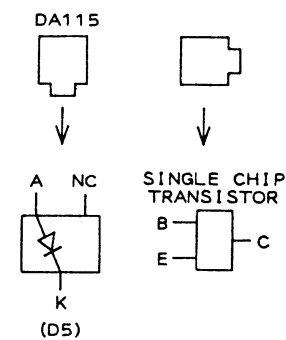
P1 ..... C1,2

## TRANSISTOR

TR3 ..... C1

## X-TALS.

X1 ..... C1  
X2 ..... C2



# PRINCIPAL PARTS LOCATION

## ICS

IC2 ..... A2  
IC3 ..... C2  
IC4 ..... A1  
IC5 ..... B1

## DIODES

D4 ..... C1  
D6 ..... C1  
D9 ..... B1  
D11 ..... B2

## CONNECTOR

J1 ..... B,C1,2

## INDUCTORS

L1 ..... A2  
L2 ..... C2  
L6 ..... C1  
L9 ..... B1

## TRANSISTORS

TR1 ..... C1  
TR2 ..... C1  
TR5 ..... C2  
TR6 ..... B2  
TR8 ..... C1

## VARIABLE RESISTOR

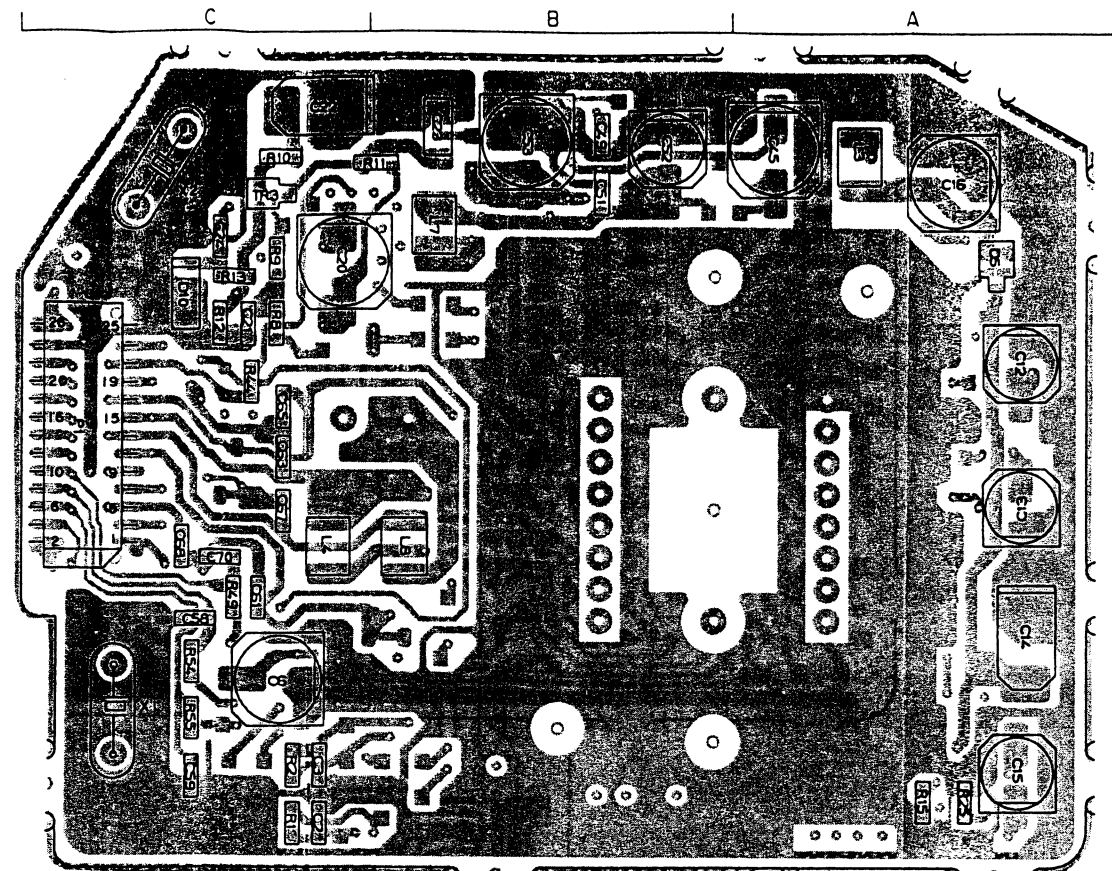
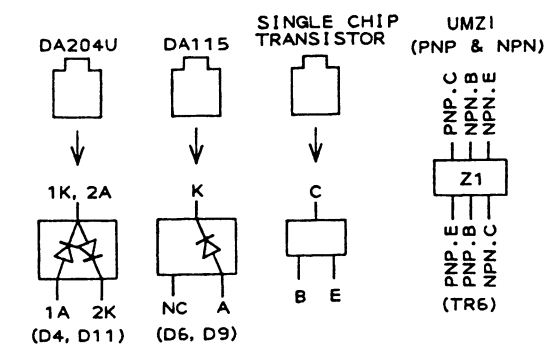
VR1 ..... C1

## VARIABLE CAPACITORS

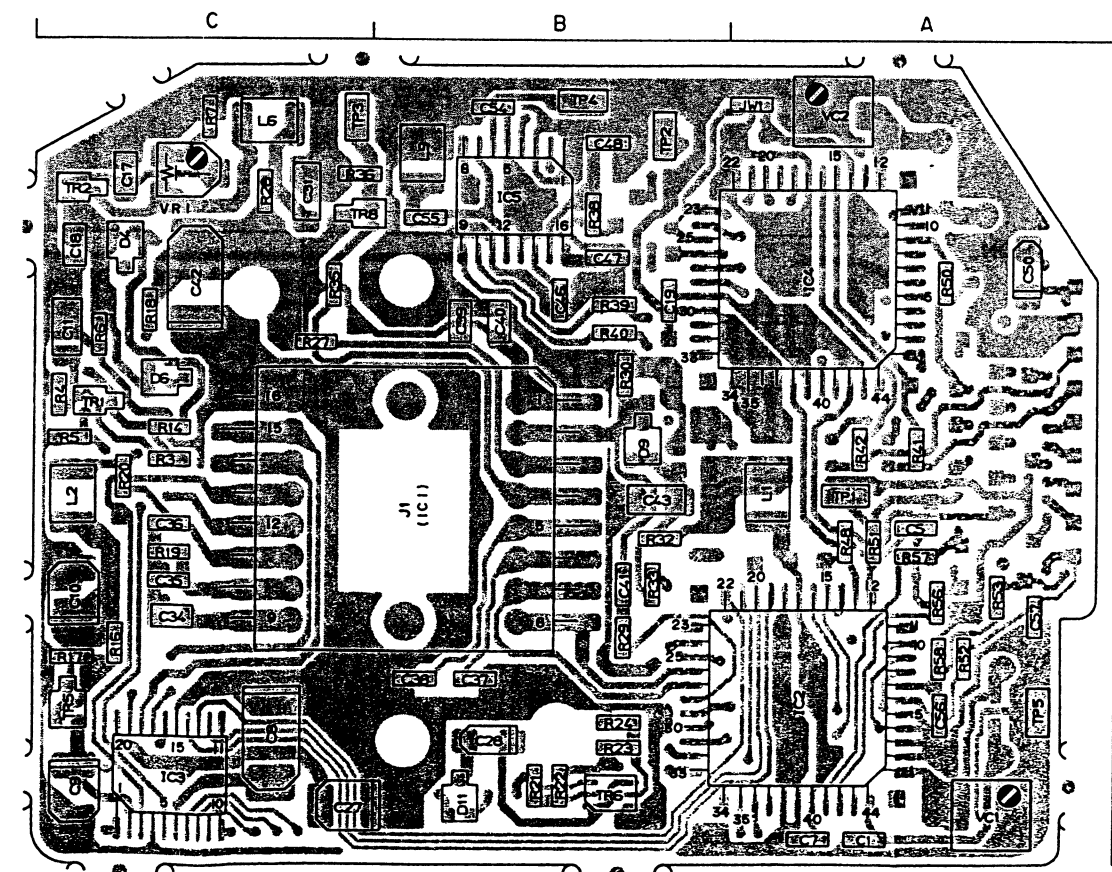
VC1 ..... A2  
VC2 ..... A1

## TEST POINTS

TP1 ..... A2  
TP2 ..... B1  
TP3 ..... C1  
TP4 ..... B1  
TP5 ..... A2

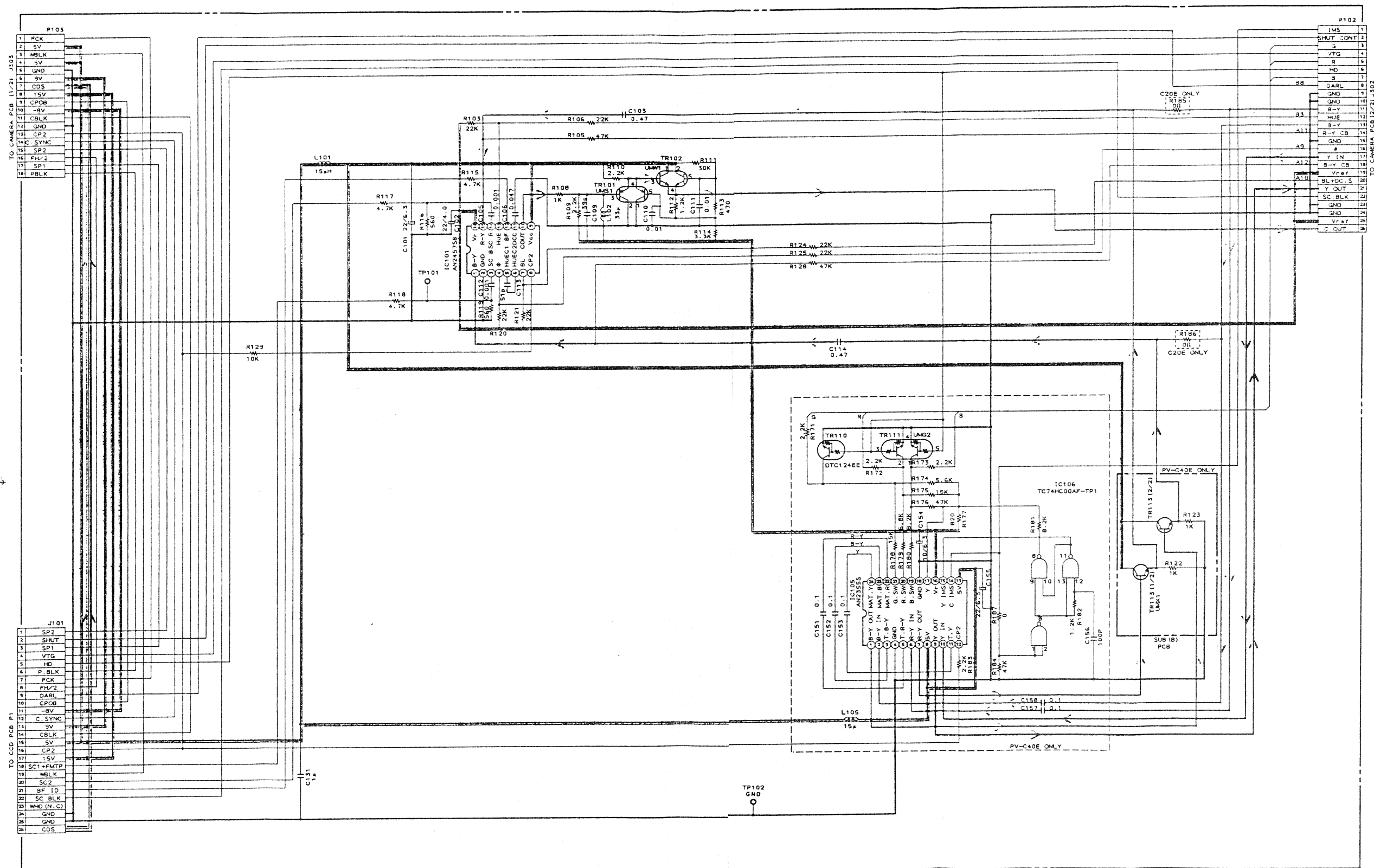


CCD PCB V301IA502CJ1 (BOTTOM VIEW)



CCD PCB V301IA502CJ1 (TOP VIEW)





-B (POWER SUPPLY) LINE  
 -LUMINANCE (Y) SIGNAL LINE  
 -CHROMINANCE (CHROMA) SIGNAL LINE  
 \*INDICATED SIGNAL LINES ARE FOR MODEL PV-C40E ONLY

NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS (Ω)  
 ALL CAPACITORS IN pF  
 ALL INDUCTORS IN μH (μ)

PV-C20E/C40E  
 ENCODER  
 SCHEMATIC DIAGRAM  
 No.10-6 V301106M  
 A1

# PRINCIPAL PARTS LOCATION

## ICS

IC101 ..... B2  
IC105 ..... C1,2

## CONNECTOR

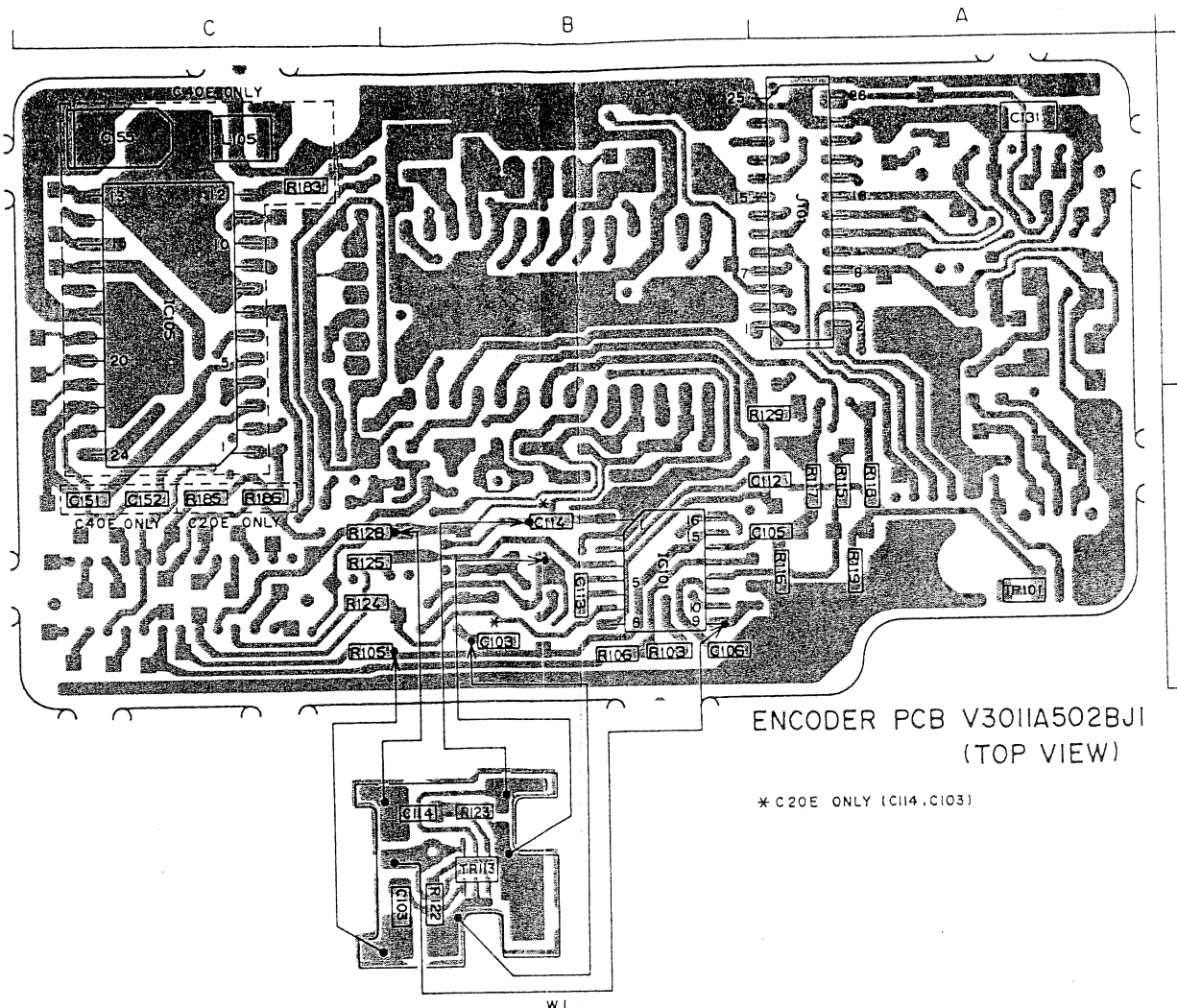
J101 ..... A1

## INDUCTOR

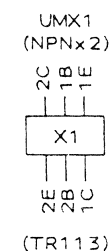
L105 ..... C1

## TEST POINT

TP101 ..... A2



SUB (B) PCB V301IA503B  
(PV-C40E ONLY)



# PRINCIPAL PARTS LOCATION

## IC

IC106 ..... A1

## INDUCTORS

L101 ..... C2  
L102 ..... B2

## CONNECTORS

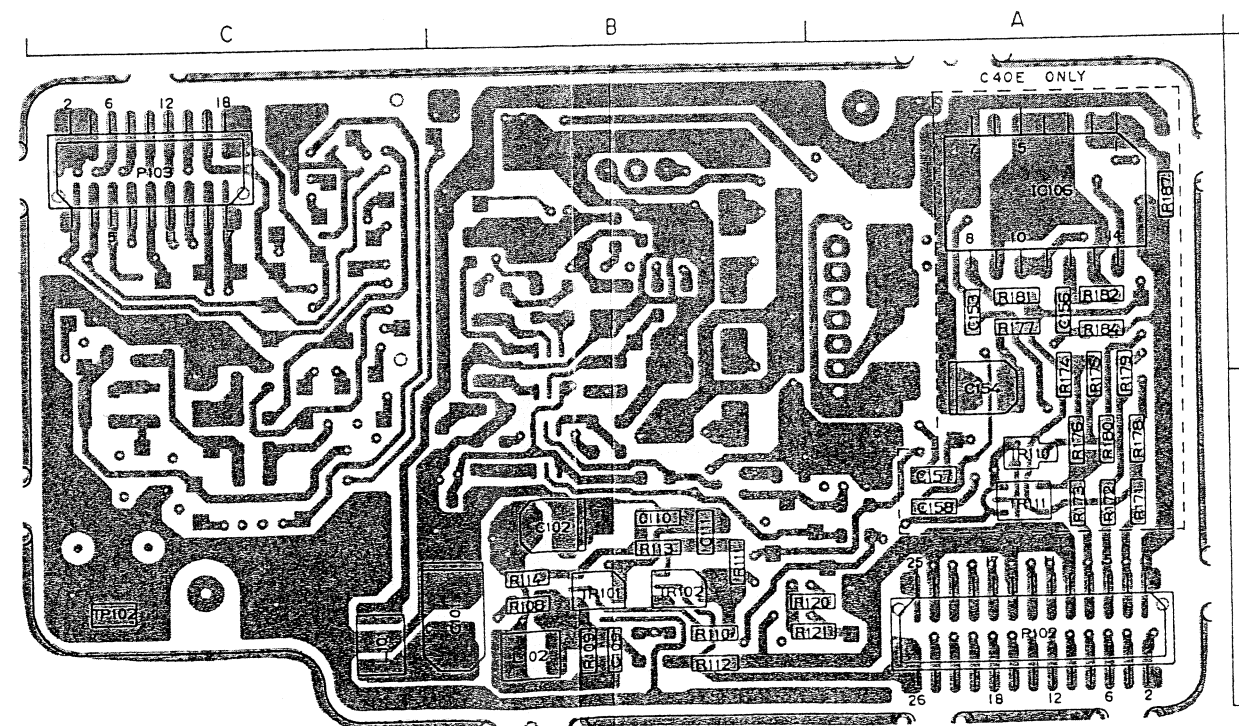
P102 ..... A2  
P103 ..... C1

## TEST POINT

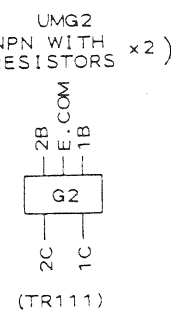
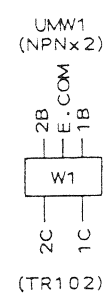
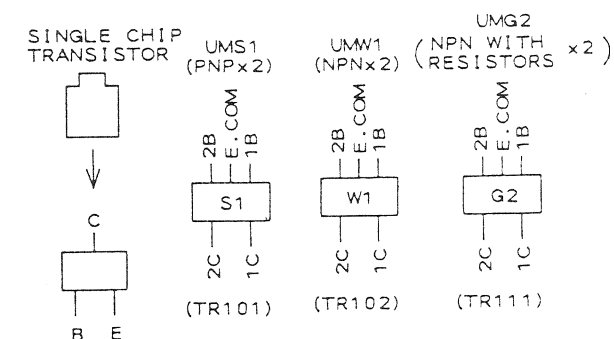
TP102 ..... C2

## TRANSISTORS

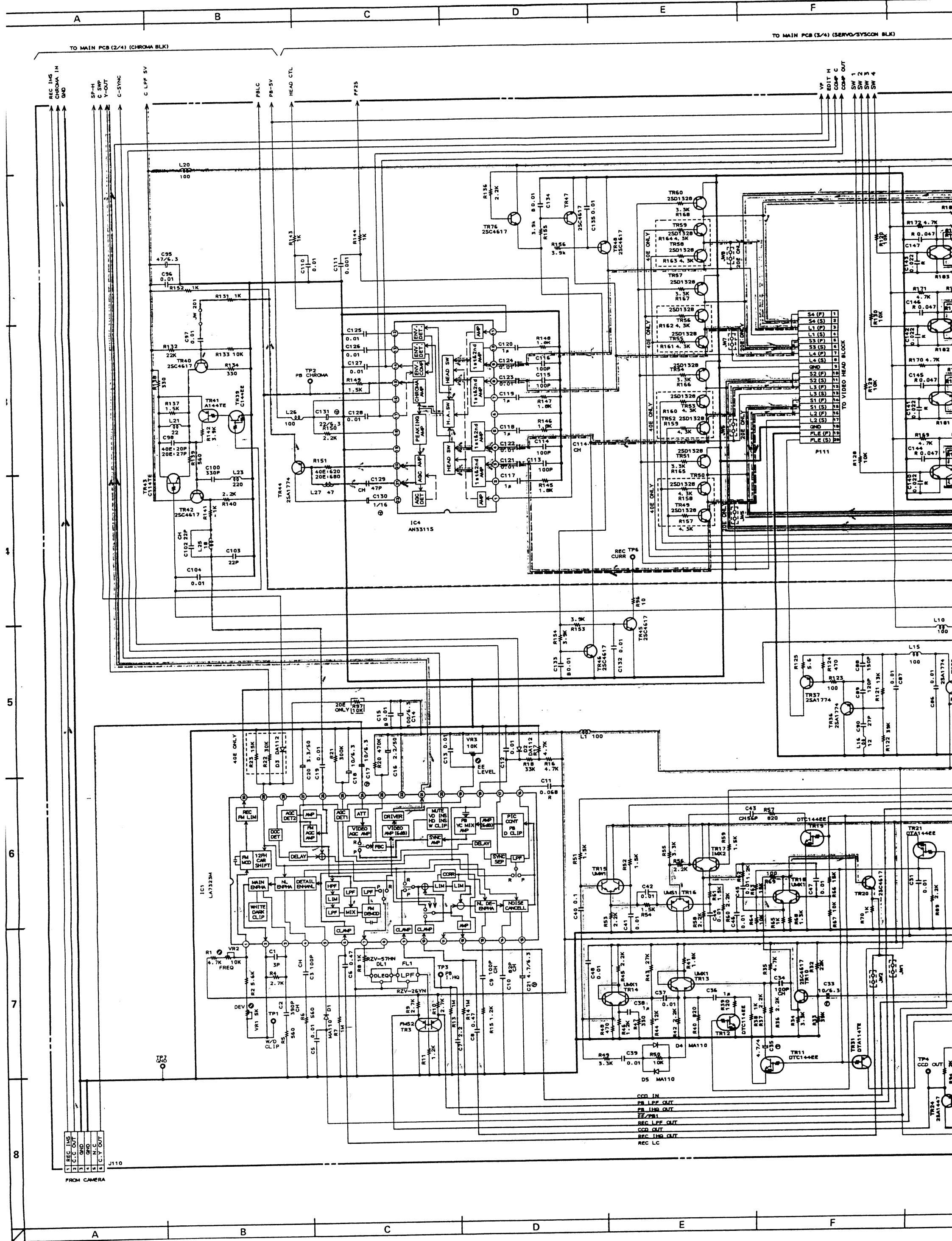
TR101 ..... B2  
TR102 ..... C2  
TR110 ..... A2  
TR111 ..... A2

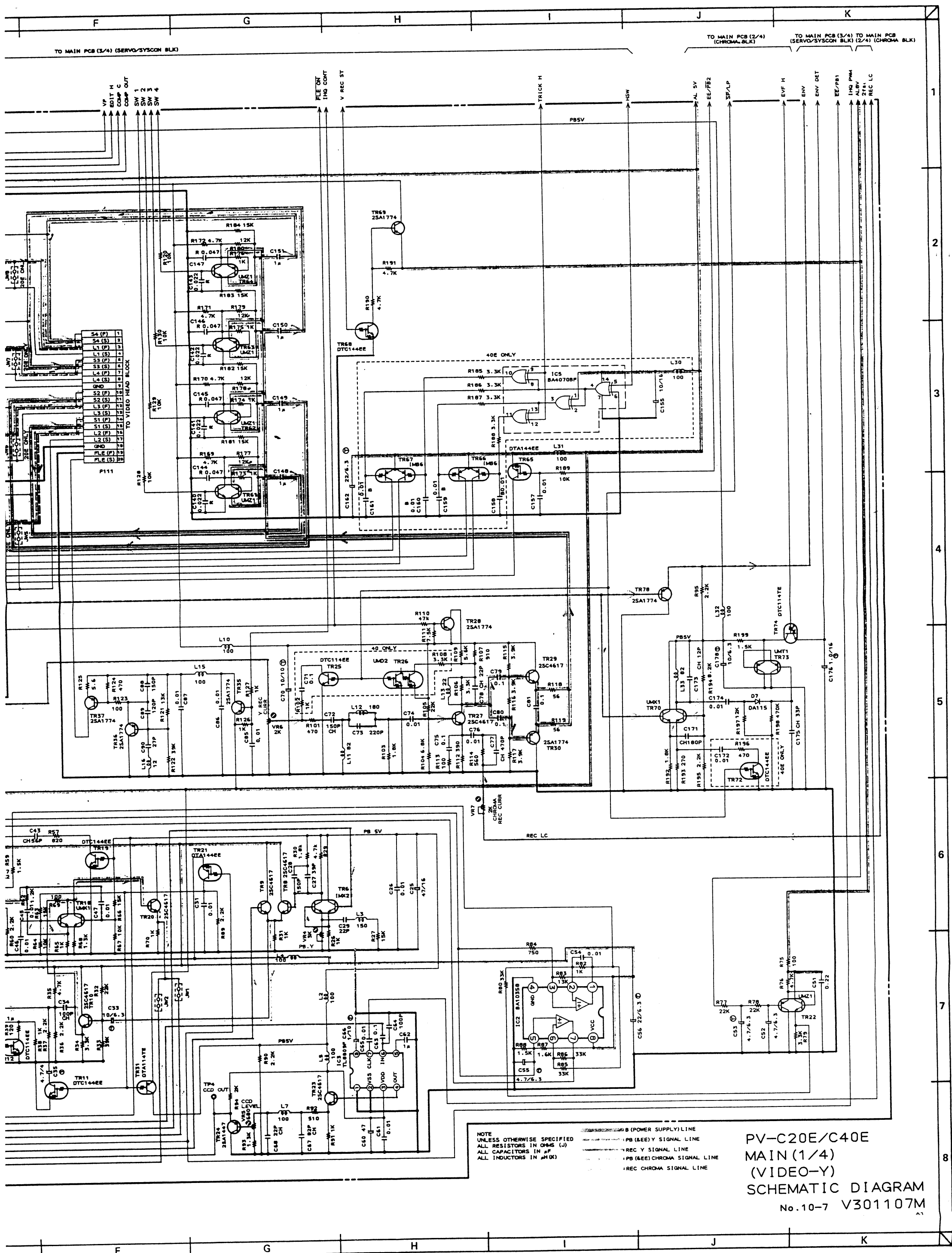


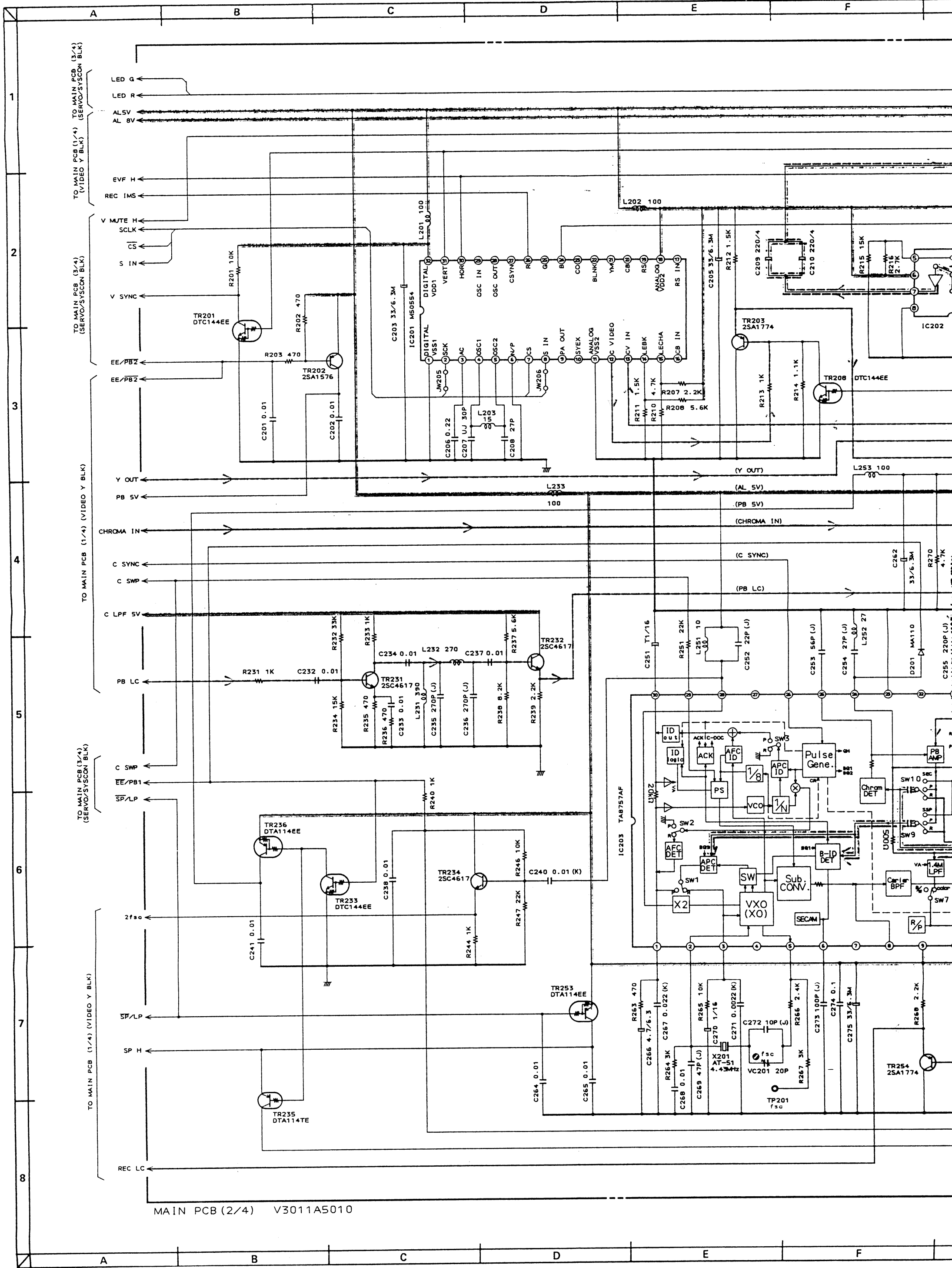
ENCODER PCB V301IA502BJI (BOTTOM VIEW)

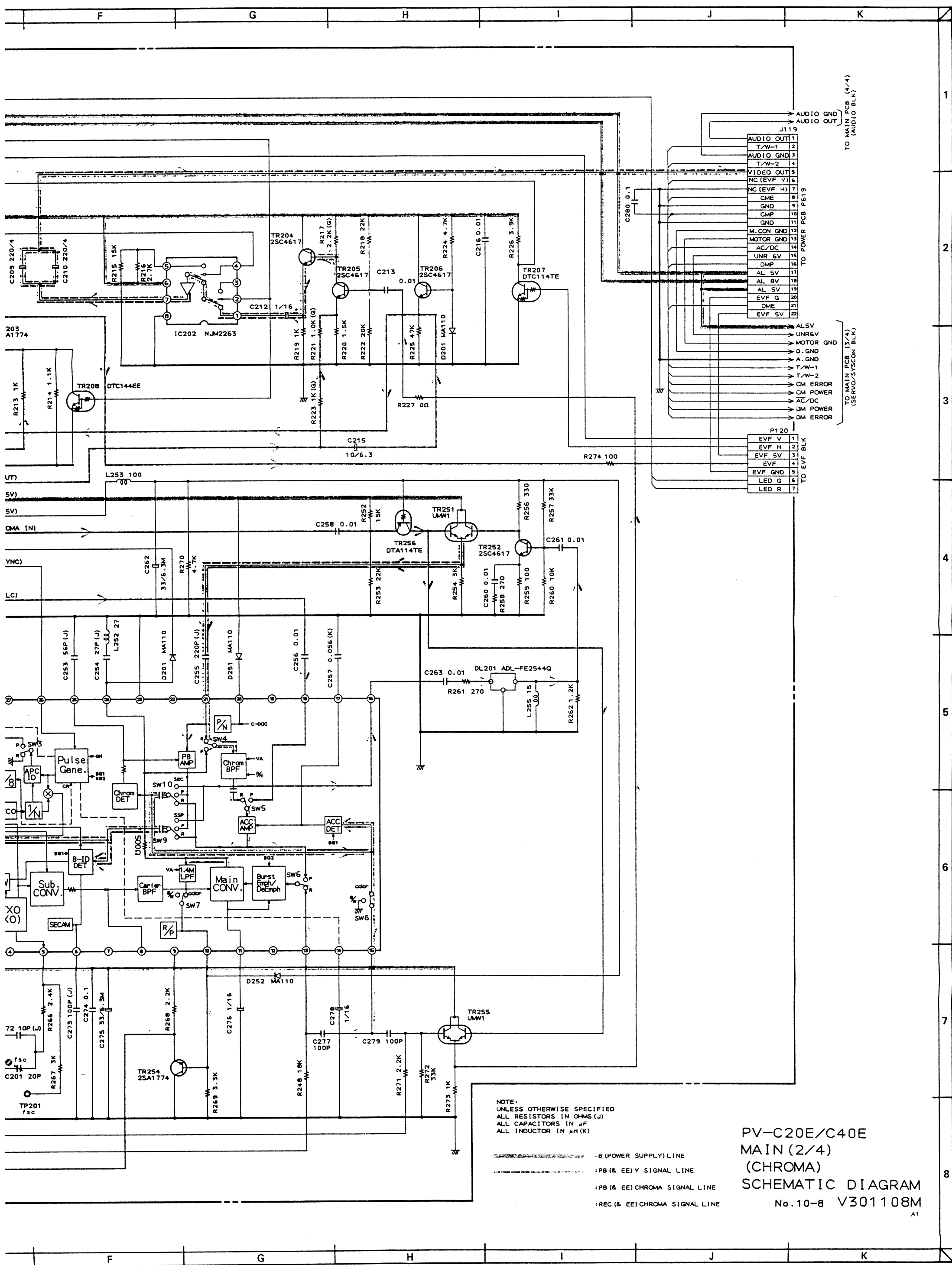


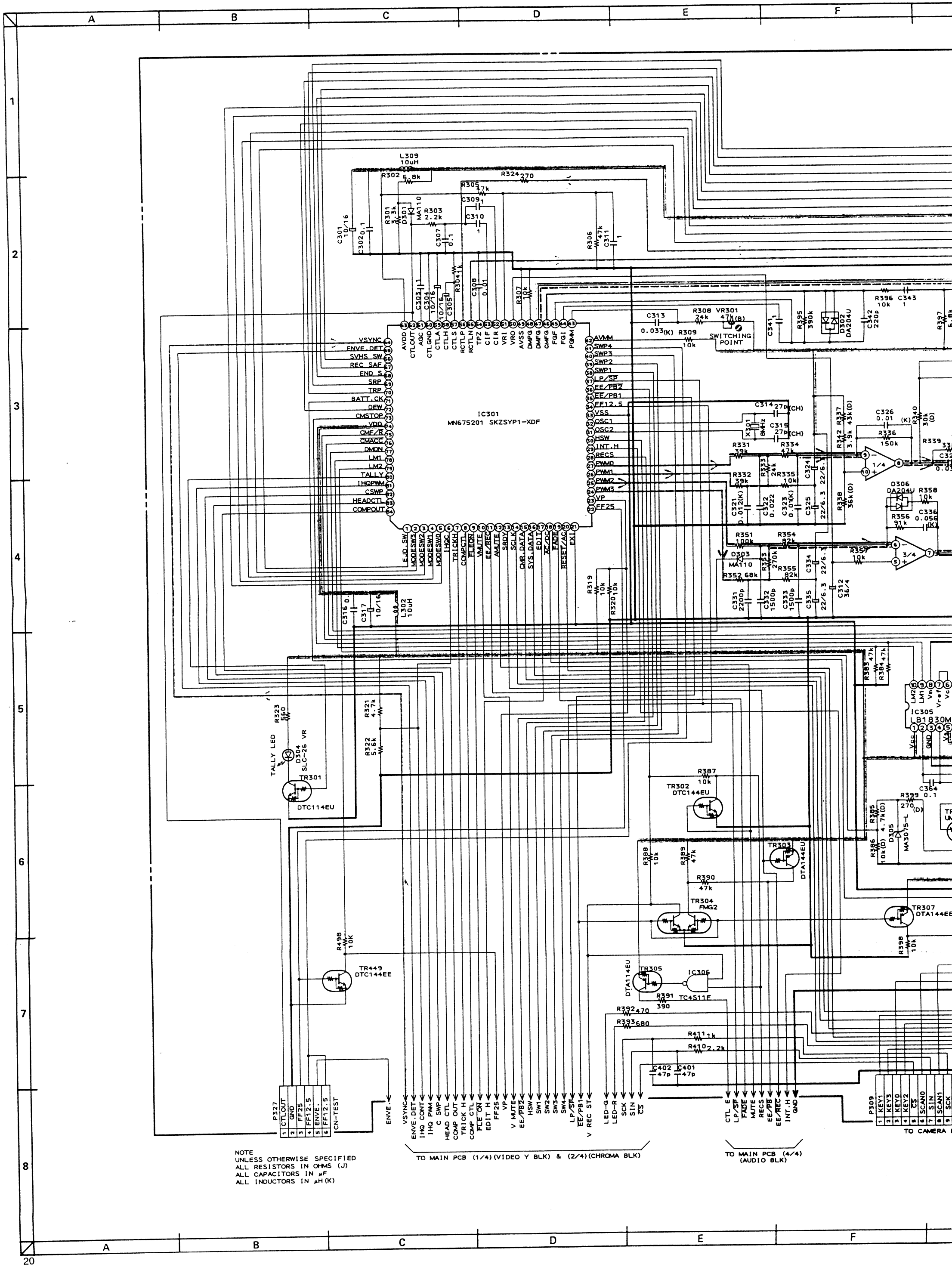












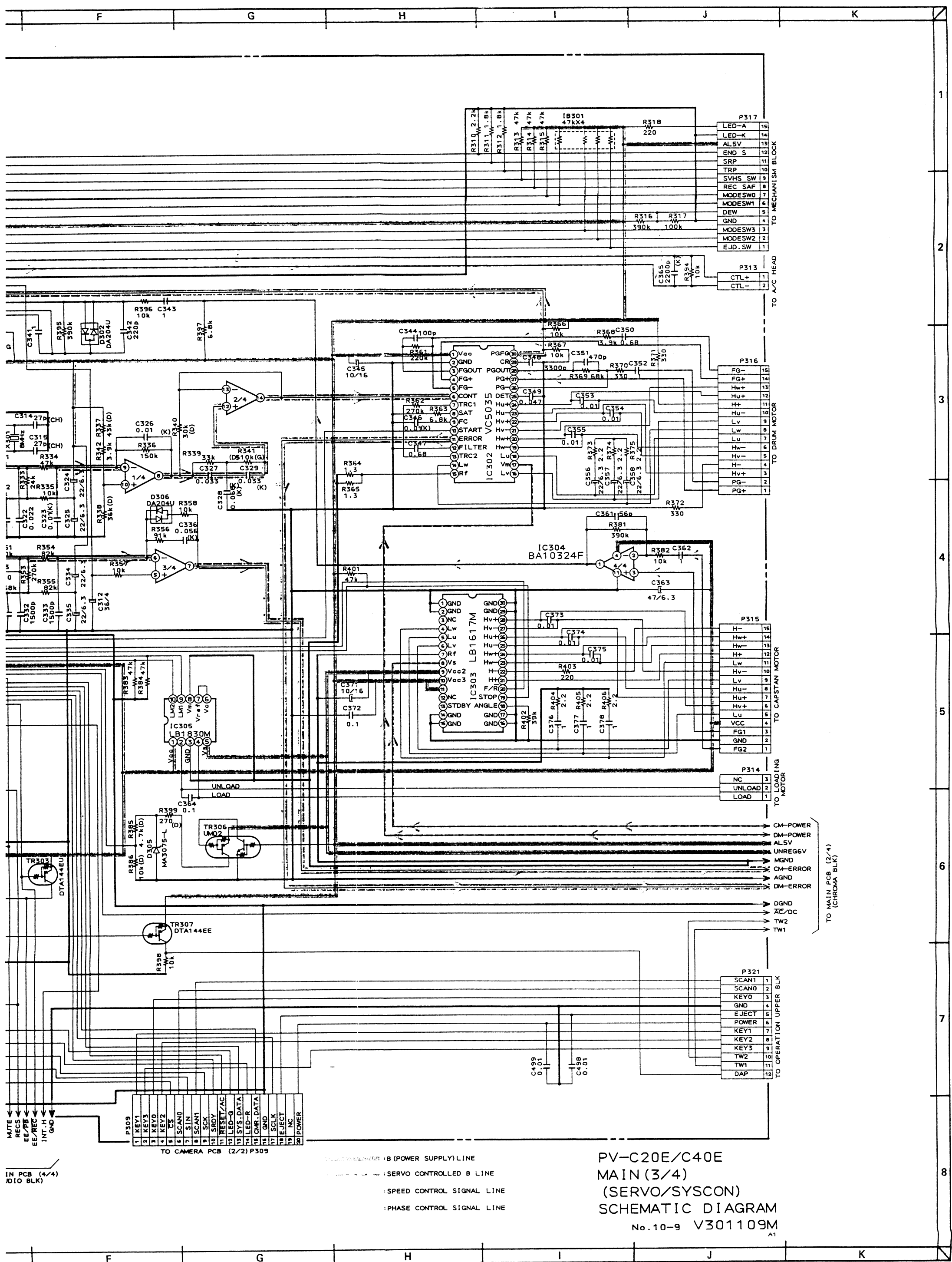
NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (J)  
ALL CAPACITORS IN  $\mu$ F  
ALL INDUCTORS IN  $\mu$ H (K)

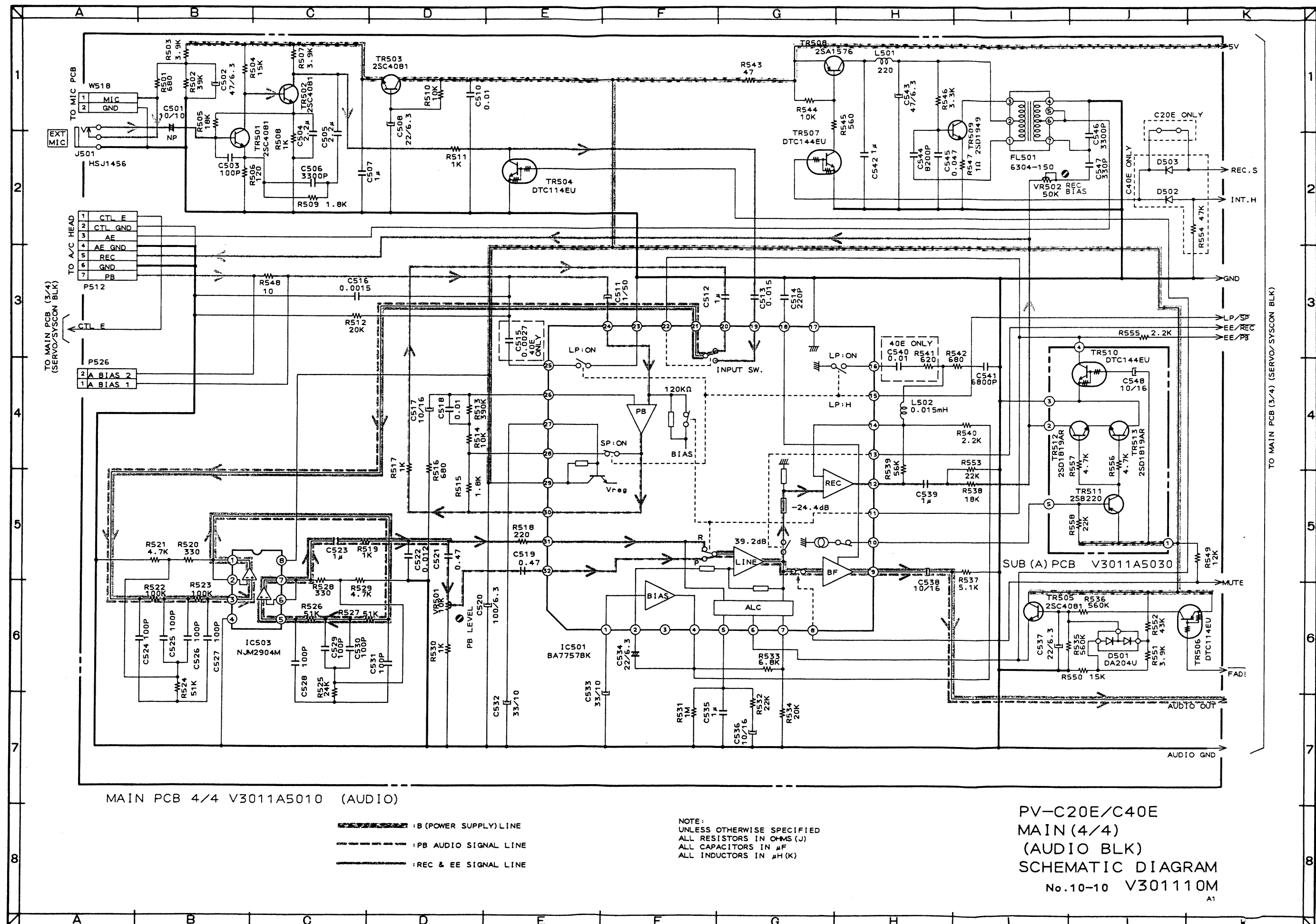
TO MAIN PCB (1/4) (VIDEO Y BLK) & (2/4) (CHROMA BLK)

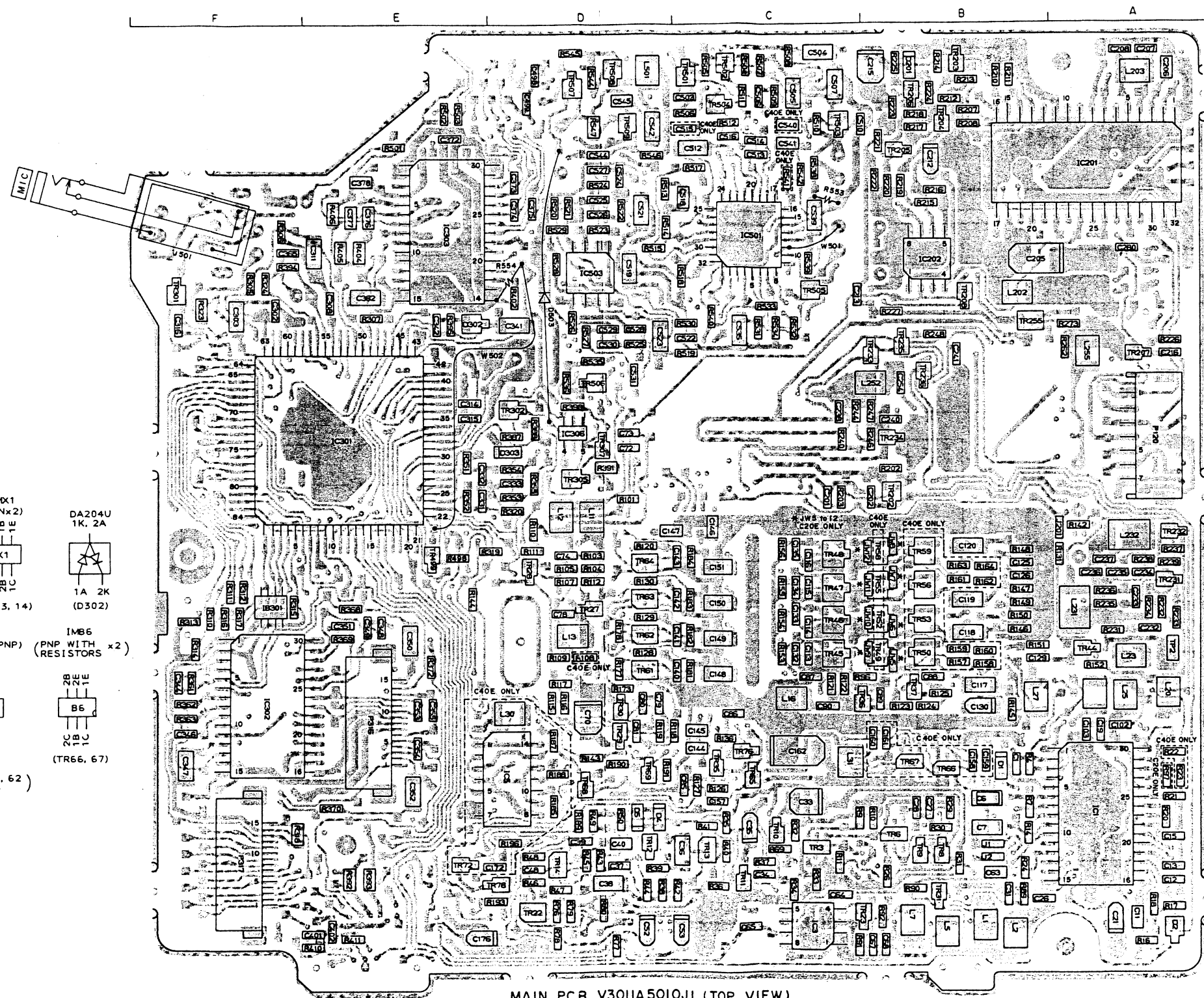
TO MAIN PCB (4/4)  
(AUDIO BLK)

TO CAMERA









MAIN PCB V3011A5010J1 (TOP VIEW)

# PRINCIPAL PARTS LOCATION

ICS		TRANSISTORS	
IC1	A5,6	TR3	C6
IC3	C6	TR6	B5
IC5	D5	TR8	B6
IC201	A,B1	TR9	B6
IC202	B2	TR10	C5
IC301	E,F3	TR11	C6
IC302	F4,5	TR12	D5,6
IC303	E1,2	TR13	C6
IC306	D3	TR14	D6
IC501	C1,2	TR22	D6
IC503	D2	TR23	B,C6

DIODES			
D1	B5	TR27	D4
D2	A6	TR28	D4
D4	D5	TR29	D5
D5	D5	TR30	D5
D201	B1	TR31	B6
D302	E2	TR35	C5
D303	D3	TR36	B,C5
503	D2	TR37	B4,5
		TR44	A4
		TR45	C4
		TR46	C4

## INTEGRATED BLOCK

IB301	F4
-------	----

## INDUCTORS

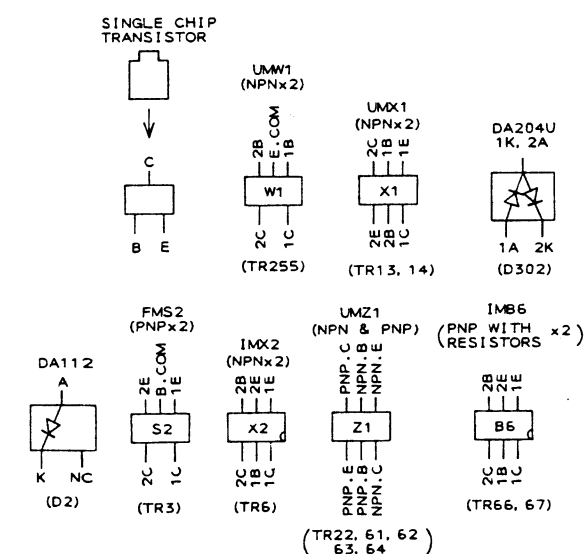
L1	B6	TR50	B4
L2	B6	TR52	B4
L5	B6	TR53	B4
L7	B6	TR55	B4
L11	D3	TR56	B4
L12	D3	TR58	B4
L13	D4	TR59	B4
L16	C5	TR61	D4
L20	A4,5	TR62	D4
L23	A4	TR63	D4
L25	A4,5	TR64	D4
L27	B5	TR65	C5
L30	D5	TR66	B5
L31	C5	TR67	B5
L202	B2	TR68	D5
L203	A1	TR69	D5
L231	A4	TR72	E6
L232	A3,4	TR76	C5
L252	B3	TR78	D6
L255	A2	TR202	B3
L501	D1	TR203	B1

## CONNECTORS

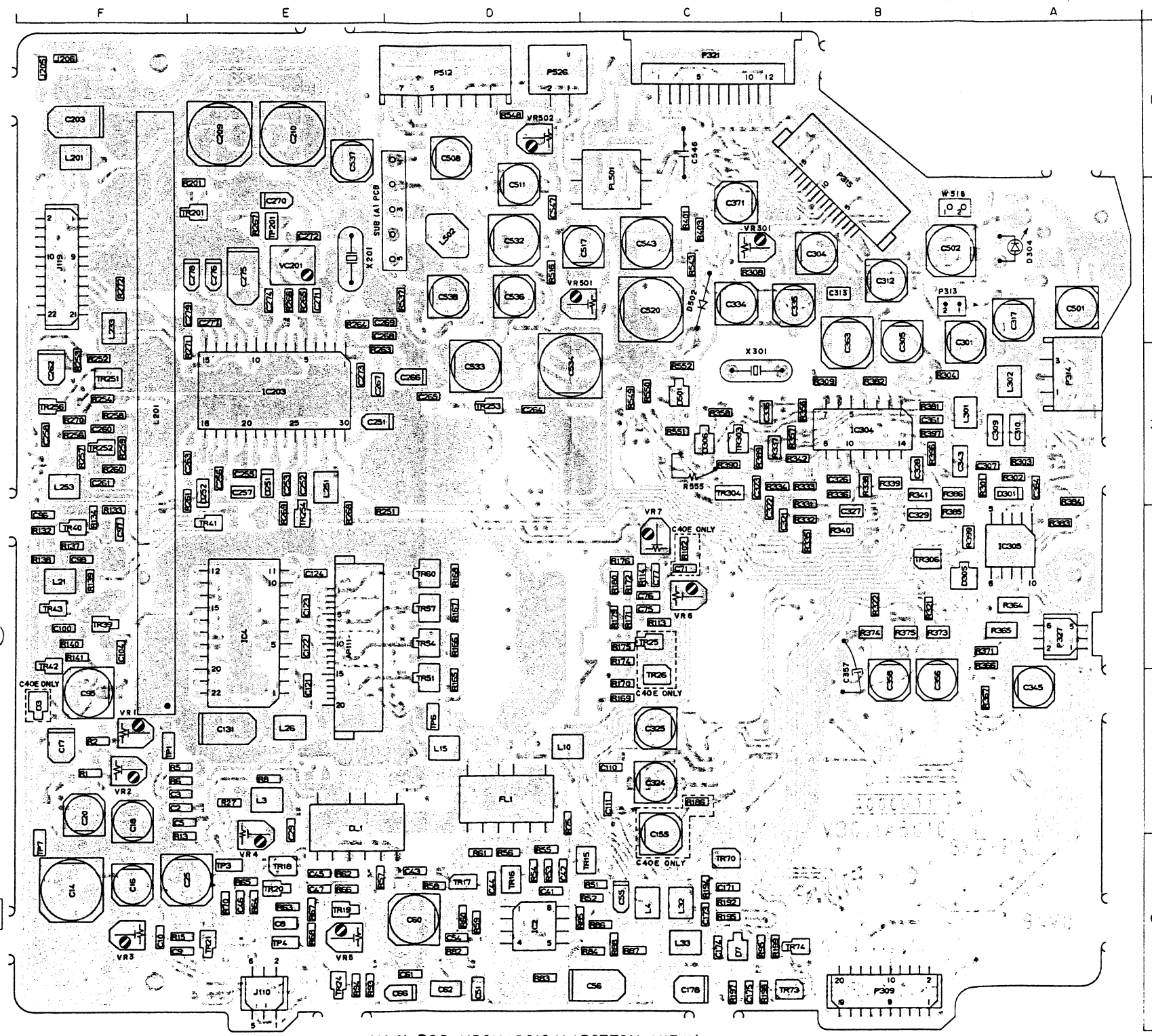
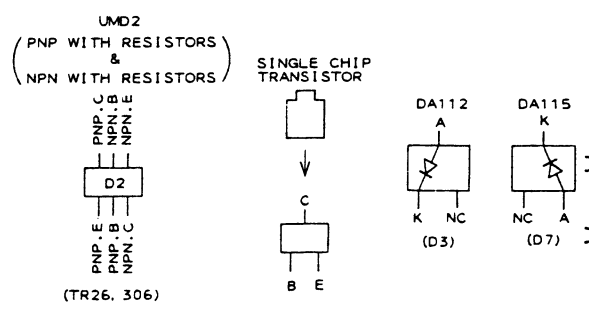
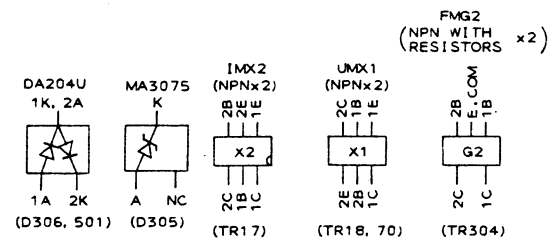
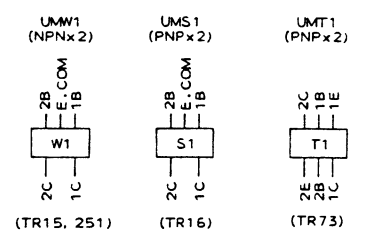
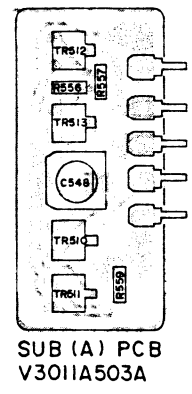
P120	A3	TR204	B1
P316	E,5	TR205	B1
P317	F5,6	TR206	B1
J501	F1,2	TR207	A2
		TR208	B2
		TR231	A4
		TR232	A3,4
		TR233	B2
		TR234	B3
		TR235	B2
		TR236	B2,3
		TR255	B2
		TR301	F1
		TR302	D3
		TR305	D3
		TR307	D3
		TR499	E4
		TR501	C1
		TR502	C1
		TR503	C1
		TR504	C1
		TR505	C2
		TR506	D3
		TR507	D1
		TR508	D1
		TR509	D1

## TEST POINT

TP2	A4
-----	----







# PRINCIPAL PARTS LOCATION

ICs		TRANSISTORS	
IC2	D6	TR15	C6
IC4	E4,5	TR16	D6
IC203	E3	TR17	D6
IC304	B3	TR18	E6
IC305	A4	TR19	E6
		TR20	E6
		TR21	E6
		TR24	E6
		TR25	C4
		TR26	C5
		TR39	F4
		TR40	F4
		TR41	E4
		TR42	F4,5
		TR43	F4
		TR51	D5
		TR54	D4
		TR57	D4
		TR60	D4
		TR70	C6
		TR73	B6
		TR74	B6
		TR201	E,F2
		TR251	F3
		TR252	F3
		TR253	D3
		TR254	E4
		TR256	F3
		TR303	C3
		TR304	C3
		TR306	B4
DIODES		VARIABLE CAPACITOR	
D3	F5	VC201	E2
D7	C6		
D251	E3		
D252	E3		
D301	A3		
D304	A2		
D305	B4		
IC306	C3		
IC501	C3		
IC502	C2		
FILTERS		VARIABLE RESISTORS	
FL1	D5	VR1	F5
FL501	C1,2	VR2	F5
		VR3	F6
		VR4	E5,6
		VR5	E6
		VR6	C4
		VR7	C4
		VR301	C2
		VR501	C,D2
		VR502	D1
CONNECTORS		DE LAY LINE	
J110	E6	DL201	F3
J119	F2		
P111	E4,5		
P309	B6		
P313	B2		
P314	A3		
P315	B1,2		
P321	C1		
P327	A4		
P512	D1		
P526	D1		
INDUCTORS		WIRE	
L3	E5	W518	B2
L4	C6		
L10	D5		
L15	D5		
L21	F4		
L26	E5		
L32	C6		
L33	C6		
L201	F1		
L233	F2		
L251	E3		
L253	F3		
L301	B3		
L302	A3		
L502	D2		
TEST POINTS		X-TALS	
TP1	F5	X201	E2
TP3	E6	X301	C3
TP4	E6		
TP6	D5		
TP7	F6		
TP201	E2		

## ABBREVIATIONS (VIDEO)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A	Audio or Analogue	MOD	MODulator
AC	Alternating Current	MRS	Motor ReverSe
ACC	Automatic Color Control	NG	Noise Gate
A/C	Audio and Control	NICAM	Near Instantaneous Compand Audio
ADJ	ADJust (ment)		Multiplex
AFC	Automatic Frequency Control	NON-LIN	NON-LINear
AFT	Automatic Fine Tuning	N.T.S.C.	National Television System Committee
AGC	Automatic Gain Control	OSC	OSCillator
AH	Audio Head	PAL	Phase Alternation by Line
AL	ALways (voltage)	PB	Play Back
ALC	Automatic Level Control	PCB (P.C.B)	Printed Circuit Board
A-SW.P	Audio SWitching Pulse	P-COM	Phase-COMparator
A-MUTE	Audio MUTE	P DOWN	Power DOWN
ANT	ANTenna	PG	Pulse Generator
APC	Automatic Phase Control	P.I.P	Picture In Picture
ASSY	ASSEMBLY	PL, PLG	PLunger (PLunGer)
BAL	BALance	PRG (PGM)	PRoGram (ProGraM)
B DOWN	Break DOWN	PU	Pick UP (head, pulse)
BGP	Burst Gate Pulse	PWR	POWeR
BLK	BLock or BLack	Q	Quality factor
BPF	Band Pass Filter	R	Right
BU	Back Up (voltage)	RAM	Random Access Memory
B/W	Black and White	REC	RECORD
C	Chroma or Color	REF	REFERENCE
CCD	Charge Coupled Device	REF-V	REFERENCE Vertical signal
CCIR	Comité Consultatif International des	REG	REGulator
	Radio communications	REV (REVW)	REView (REView)
CH (ch)	CHannel (channel)	REW	REWind
CLK	CLock	RF	Radio Frequency
CM	Capstan Motor	ROM	Read Only Memory
CN	CoNnector	R.S SW	Record-Safety SWitch
COMP	COMParator	RST (RES)	ReSet (RESet)
CSW	Cassette SWitch	RVS	ReVerSe
CSYNC	Composite SYNC	S	Sensor, Shield
CTL	ConTrol	SAW	Surface Acoustic Wave
CUE	CUE	SC	SimulCast
DAC	Digital to Analog Converter	S CLK	Serial CLock
DC	Direct Current	SECAM	SEquentiel Couleur À Mémoire
DEMODO	DEMODulator	S & H	Sample and Hold
DET	DETECT (DETECTOR)	SLP	Super Long Play
DL	Delay Line	SP	Standard Play
DM	Drum Motor	SPD	SPeeD
DOC	Drop Out Compensator	SRP	Supply Reel Pulse
D.P.E	Drum Phase Error	SRV	SeRVo
D.PG	Drum Pulse Generator	SOW	Sync On Word
EE	Electronic to Electronic	STBY	STandBY
EF	Emitter Follower	S.VHS	Super VHS
EMPHA	EMPHAsis	SW	SWitch
ENV	ENVELOPE	SW'NG	SWitchING
EP	Extended Play	SWP	SWitching Pulse
EP ROM	Erasable Programmable ROM	SYNC	SYNChronize
EQ	EQUALizer	T-AUDIO	Tuner AUDIO
FE	Full track Erase	TPZ (TRAPE)	TraPeZoid (TRAPEzoid)
FF	Flip-Flop or Fast Forward	TRK	TRacking
FG	Frequency Generator	TRP	Take up Reel Pulse
Fig	Figure	T/U	Take Up
FLD	FLUORESCENT Display	TV	TeLeVision
FM	Frequency Modulation	UHF	Ultra High Frequency
Fo	resonance Frequency	UNR	UNRegulated (voltage)
FREQ	FREQUENCY	V	Vertical or Video
GND	GrouND	VASS	Video Address Search System
H	Horizontal	VCO	Voltage Controlled Oscillator
HP	Horizontal (sync) pulse	VH	Video Head
HPF	High Pass Filter	VHF	Very High Frequency
HQ	High Quality System	VHS	Video Home System
IC	Integrated Circuit	VIF	Video Intermediate Frequency
ID	IDentification	VISS	Video Index Search System
IDL	IDLe (Voltage)	VJ	Video Judge
IMS	Interactive Monitor System	VM	Voltage for Memory
INS	INSert	VOB	Video On Blank
INV	INVerter	VOW	Video On Word
L	Left	VP	Vertical (sync) Pulse
LED	Light Emitting Diode	VPS	Video Program System
LIM	LIMitter	VPT	Video Programming by video Text
LM	Loading Motor	VT	Voltage for Tuning
LM STP	Loading Motor STop	WHT	WHITe
LP	Long Play	Y	Luminance
LPF	Low Pass Filter	2H	2 Hour (SP)
ME-SECAM	Middle East SECAM	4H	4 Hour (LP)
MI-COM	Micro COMputer	6H	6 Hour (SLP/EP)
MM	Mono-stayble Multi		

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